# COAL AGE

Vol. 5 NEW YORK, MARCH 28, 1914 No. 13


## The Rover

By Berton Braley

*Written expressly for Coal Age.*

I've mined in France an' I've mined in Wales
An' I've mined n Russia, too,
An' I've heard all kinds of miner's tales
From many a husky crew;
In mines that's shallow an' mines that's deep,
I've drilled in the good black coal,
But there ain't no job that I seem to keep,
For I've got a rovin' soul!

There's some men loves a wife an' home
An' children four or five,
But something makes *me* want to roam
As long as I'm alive,
So I gets a job an' I works away
For mebbe a month or so,
Then I goes to the office to draw my pay
An' off on the trail I go.

There's a lot of places I've never seen,
That I kinda want to see,
So I hits the grit with an ardor keen
An' a heart that's light an' free,
I just can't stay in the same old place
A-seein' the same old things,
So I moves along at my own sweet pace
An' takes what my fortune brings.

Wherever there's coal that men must dig
I'm sure to get a job,
So I moves around in the world so big
As long as my heart can throb;
I swears that' I ll quit it now an then,
But I gets the same old call,
For the earth is full of mines an' men,
An' I want to see them all!

# Ideas and Suggestions

## Converting the Foreman to the "Safety-First" Idea

By Sim C. Reynolds*

*SYNOPSIS—The author points out the tendency of the busy mine-foreman to neglect the "Safety First" idea, until converted to it by the occurrence, under his charge, of some preventable accident. He further indicates the necessity of putting the foreman, as, likewise, the miners, on guard before, not after, such an occurrence; and suggests, as a preventative, the practice of photographing the conditions surrounding an accident and distributing copies among all persons likely to be affected by a similar accident.*

A foreman of one of the northwestern ore mines was showing the writer—whose business happened to be the looking up of dangerous conditions—through his concentrating plant. In that part of the establishment there were a number of belt-driven machines in operation washing ore. The larger-sized belts were guarded, but those of four or five inches or less were not. Having this matter brought to his attention the foreman in question said that it was his opinion that placing guards about such belts was an entirely superfluous precaution, and no arguments to the contrary that the writer could think of changed that opinion, although in other essential features concerning safety he was perfectly reasonable. He seemed to look at the subject from the same point of view that it is seen by many others; that the larger possibilities of creating accidents should be closely looked to, but that the smaller things are too trifling to demand much care.

### Belated Conversion

In less than ten days from that time this foreman was thoroughly converted to the entire program of "Safety First," but in a way that is altogether too common. The poor fellow who accomplished the missionary work in this case did so by having an arm torn off at the shoulder—a tragic conversion, but decidedly efficient, as later events proved. As many another has done, this foreman has swung to the other extreme, and insists on the utmost measures of safety being taken by all under his charge. But who shall say but the price paid for that conversion was not too high, particularly when it might have been discounted by a little foresight and care regarding the so called little things.

This incident recalls another which, still more tragically, made a convert of a mine foreman to the "Safety First" idea. It happened at a mine not fifty miles from Pittsburgh. In order to conserve the lives of the employees, the Department of Mines had issued an order that all electric currents should be kept off the wires running into the mine, while men were being hauled to their work by mules over the electric haulage road. This was obviously a very necessary precaution, since the same state wrongly allows each workman to take with him into his working place as much as 25 lb. of powder—sufficient to last a week.

The particular morning when this accident happened, cutting was behind, and three or four machines were kept running right through from the night shift, which, of course, necessitated the current being left on the feed line in violation of the state rule. A switch, situated at the mine entrance, made the connection between trolley and feed lines, and on this occasion somebody had closed the switch for the purpose mentioned. One of the miners, sitting with others in a pit car waiting to be pulled into the mine, had a full keg of powder under him. Another came along with an 8-ft. drill, and in putting it into the car made a connection between the wire and the keg by means of the draw-bar, with the result that four men were instantly killed and a dozen others maimed for life. The very thing which the state department had anticipated had happened. The mine foreman at that pit now insists on carrying the "Safety First" idea to the limit of precaution insofar as concerns this particular matter. Not only does he not allow current to be on the wires while men are being hauled in, but also has the generator shut down until all danger is over from that source. But again may we not ask if the cost of converting him was also too high, particularly since it, too, could have been averted by a little more care regarding details.

### Greater Responsibility with the Foreman

Statistics compiled by the Federal Bureau of Mines attribute the larger portion of all accidents in industry connected with mining to the carelessness of the miners themselves, and the figures are no doubt correct as a whole. Yet, to cut down this spirit of recklessness, which is universal wherever public work is carried on, and not only in coal mining as some may think, we have got to turn the man in direct touch with the workmen into a "Safety First" enthusiast, particularly when that man is the foreman of a mining plant, because he is, more so than any other in the industry, the individual on whose shoulders the chief responsibility rests for accidents that occur at his mine; and secondly, because the men at the great majority of pits get their orders direct from him, or from the fireboss through him. His attitude with regard to the "Safety First" idea will inevitably be reflected in the attitude and actions of his workmen, and they will be more or less earnest and serious in this respect in proportion as they see him earnest and serious in carrying out this idea in all things. It is thus that the foreman or superintendent who is deeply imbued with this chiefest of industrial ethical ideas, which, from a present-day intermittent thing, will, we believe, in time become an industrial institution, unconsciously communicates his care and caution to all with whom he comes in touch. Hence the importance of his being converted first.

*Inspector, Aetna Life Insurance Co., Hartford, Conn.

### Accidents Rarely Repeat Themselves

From an unusually extensive experience along the line of dangerous work in mines, the writer is convinced that, as a rule, accidents do not repeat themselves. I mean by that, that if a foreman has a driver crushed between a car and rib because of insufficient space for clearance he does not usually have that kind of accident happen again, at least not soon nor in the same place. His attention, because of that accident, is centered on the *cause* of it, and precautions are immediately taken to prevent the like occurring elsewhere. It follows that if the interest of the foreman can be obtained beforehand in a like regard, much good will result.

Many methods have been put into practice with more or less success in efforts to accomplish this. One large corporation in the bituminous field has illustrated talks given frequently in its various mining camps. Moving pictures showing the right and the wrong way of doing things, the conditions which lead up to accidents, are pictured and explained not only to officials but to all the workmen. It is the author's belief that attendance at such classes should be made compulsory, particularly with regard to the more ignorant workmen. Other companies issue illustrated pamphlets on safe management to its mine officials, and again others have appointed "Safety Directors" and "Company Inspectors" whose duty is solely to ferret out dangerous conditions and spots. This is as it should be at all plants, for the very obvious reason, which every mine foreman will readily agree with, that in most mines the foreman's attention is expected and demanded to the limit of his time and ability in the getting out of the largest possible tonnage, and, regardless of his attitude toward the idea of safety, he has not much time to devote to it. The larger companies are in many instances going fully into this, but no company is too small to not admit of some work along this line. In fact it is just as essential to the welfare of the industry as a whole that the small companies carry out the "Safety First" idea according to their means as it is for the larger companies to do so. The lives and health of the fifty or one hundred men employed in the little mine, should be, and are, equally as valuable as the same number multiplied several times over in the big plant. The reduction of mortality and liability for accidents will be in direct proportion to the interest taken in safety inspection at any mine, whether it be large or small.

### Photographed Accidents Good Educators

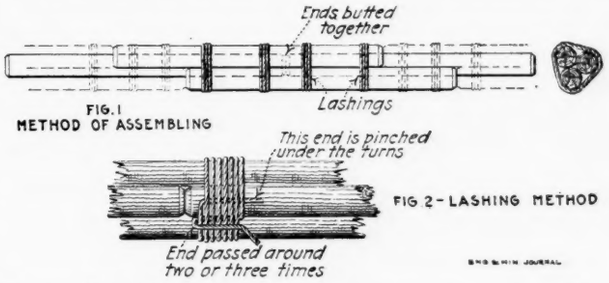
It occurs to the writer that an excellent plan to follow, in keeping before the mine officials the necessity for safety measures, would be in event of an accident—especially a fatal accident—to have photographs made of the conditions leading up to the accident, and of the place where it occurred, and copies sent to all interested parties at the company's various mines. A good series of photographs will vividly show and silently yet eloquently explain to even the foreign miner who cannot speak a word of English, what caused a man to be killed at that place, no matter whether the accident occurred between a car and rib, under draw-slate, by a fall of coal, or at any other of the numerous death spots that are in every mine. In the case of the more common form—death by fall of roof—a picture showing where the post should have been set which would have prevented the fatality, would help much to keep the matter pertinently before the minds of the men who can in a great measure increase or reduce these accidents. If the death or accident happen through an electric wire being too low, a picture taken before it was raised or guarded, would, in some instances, tell the story better than words. The pictures could be accompanied by text, when deemed essential to the purpose, explaining what should have been done to obviate such accident. They would certainly be of great value in bringing before the other fellow the possibility of the same thing occurring at his mine, even though he may have been so fortunate as to not suffer any accidents of a similar nature for some time.

## A Built-up Gin Pole

By A. Livingstone Oke*

It frequently happens, where timber is scarce, that a gin pole or other long timber is required larger than any single stick on hand. A method of building one from short lengths of either round or square timber is exhibited herewith.

The poles are laid up in threes, the ends overlapping, as shown in Fig. 1, with a lashing on both sides of each


Ends butted together
Lashings
FIG. 1
METHOD OF ASSEMBLING
This end is pinched under the turns
FIG 2 - LASHING METHOD
End passed around two or three times

Three Round Timbers Lashed together for a Gin Pole

joint; the number of turns of rope used depends on whether the pole has to sustain merely a thrust, as in a gin pole, or is to be employed for work in which it will be subjected to bending stresses. In the latter case, both the strength of the ropes, the number of turns and the tightness with which they are put on, must all be increased. If the poles available are all of the same length, but of different diameters, some care must be used in matching the sizes at different points in the length of the built-up pole, keeping the stouter ones together and gradually tapering to the smaller end. Poles may also be built with more than three members, but this number is the more satisfactory, when possible, as it makes a three-point support inside and prevents transverse movement.

Fig. 2 shows the proper method of lashing; several turns of small rope are to be preferred to fewer turns of a larger rope. One end of the rope is pinched under the turns and finally the free end taken around these by passing through several times, as shown, and the whole drawn up tight. To tighten the lashing further, short lengths of smaller rope may be passed around the turns on the other two sides as well and drawn as taut as possible.—*Engineering and Mining Journal.*

*Mining engineer, Penzance, Cornwall, Eng.

# A Large Koppers' Regenerative Coke-Oven Plant in Great Britain

*SYNOPSIS—A description of one of the largest retort-oven installations in England, with notes on the advantages of the Koppers' process. It is claimed that 25 million tons of coal per annum are consumed by this method.*

One of the largest British coke-oven plants is at the Middlesbrough Works, of the Cargo Fleet Iron Co. The Koppers' Coke Oven & Byproduct Co., of Sheffield, are just completing for this firm a third battery of 50 regenerative coke ovens and in addition to these, the whole of the byproduct plant has been remodeled. The old plant is to be abolished, and a complete new one installed, working on the Koppers' patent direct-recovery principle for the recovery of tar and sulphate of ammonia. Up to the present time, benzol has not been saved but a plant is now being erected for its recovery from all the 150 ovens.

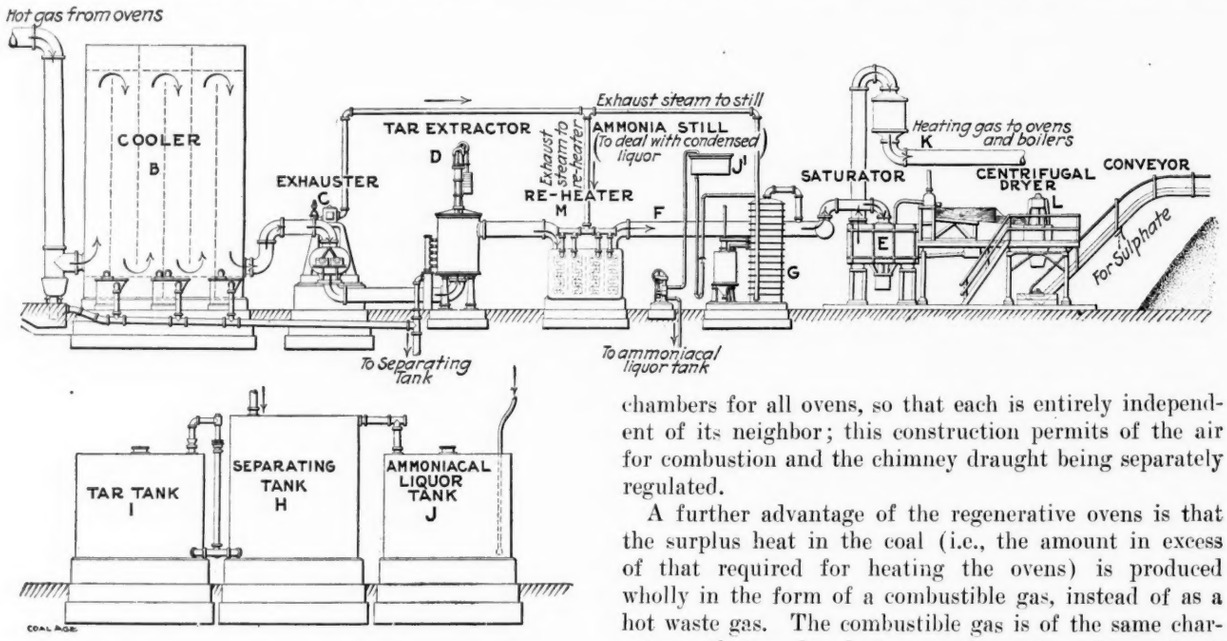



Diagram Illustrating the Koppers' Direct-Recovery System for Ammonia

### Some Advantages of the Koppers' Process

The Koppers' oven is of the vertical-flue type and possesses special features not to be found in other ovens, more particularly as regards the arrangement of the heating flues and regenerators and the facilities for inspection. The gas and air for combustion are separately distributed on each side and along the whole length of the oven and combustion takes place in each vertical flue. Each oven wall is formed of about 30 vertical flues, there being a gas jet in each flue: all ovens are heated at about 60 points.

At the top of the ovens and over all the vertical flues, openings are provided for giving access for inspection and regulation. Simple means are also provided for the regulation of combustion in each flue, which is such that it is easily possible for the walls to be uniformly heated from end to end. It is this ease of regulation which distinguishes the Koppers' oven from all other types. Uniformity in the heating of the ovens, not only results in the production of a homogeneous coke but enables the coal to be burnt off more quickly, besides which it effects great economy in the consumption of gas. It is owing to this latter economy that the surplus gas from the Koppers' oven is probably greater than that obtained from any other system.

### Waste-Heat Saving

Another distinctive feature of the Koppers' regenerative oven lies in the employment of separate regenerative chambers for all ovens, so that each is entirely independent of its neighbor; this construction permits of the air for combustion and the chimney draught being separately regulated.

A further advantage of the regenerative ovens is that the surplus heat in the coal (i.e., the amount in excess of that required for heating the ovens) is produced wholly in the form of a combustible gas, instead of as a hot waste gas. The combustible gas is of the same character as that produced at gas works, and can be employed for illuminating purposes, and more particularly for consumption in gas engines; in this latter case from two and one-half to three times the power can be generated than when the gas is used in steam boilers. Where power is required in the form of steam, it is generally thought that waste-heat ovens should be adopted, but with that type it is necessary for a special range of boilers to be erected in close proximity to the ovens, while on the other hand, the surplus gas can easily be conveyed almost any distance without loss. It is claimed that the surplus gas from Koppers' regenerative ovens will yield as much steam as the hot waste gas from waste-heat ovens. The coal is conveyed from the hopper to the stamping station and is charged into the oven in the form of a compressed cake.

### Popularity of the Koppers' Method

The byproduct plant is designed on the Koppers' direct-recovery principle, whereby the ammonia is recovered directly in the form of sulphate, thus dispensing with the usual scrubbing apparatus. Since its introduction about seven years ago, the Koppers' process has met with remarkable success, and there are now installations consuming 25,000,000 tons of coal per annum.

The illustration shown herewith is a diagrammatic representation of the Koppers' direct-recovery system for ammonia. The hot gas from the ovens enters the series of water-coolers of the multi-tubular type, where it is cooled to a normal temperature, thus bringing about the condensation of tar and aqueous vapor. The gas is then drawn by an exhauster and driven forward to a tar extractor, in which the last remaining traces of tar are effectually removed—an operation which cannot be successfully performed without cooling the gases.

After leaving the tar extractor the gas passes through a reheater, and then is delivered direct into the saturator without condensation taking place. The ammonia is extracted from the gas by direct absorption in sulphuric acid, and is recovered in the form of sulphate. The salt is automatically removed from the saturator by means of an ejector working either with steam or compressed air. The sulphate is delivered onto a collecting table and then into a centrifugal dryer, where it is completely freed from mother-liquor.

### Saving the Byproducts

The products of condensation extracted in the cooling and tar-eliminating operations are drawn off from the condensers, tar extractors, etc., and conveyed into a separating tank, where the tar and ammoniacal liquor separate, owing to their different densities. The tar flows into one storage tank, and the liquor into another. The liquor is pumped to an ammonia still, where the ammonia is driven off by steam and lime, in the usual way. The vapors of distillation are delivered into the main where they mix with the heated gas, and the whole then passes into the saturator.

No live steam is necessary in the Koppers' process, either for reheating the gas after cooling and tar extracting, or for distilling the ammoniacal liquor. For both these purposes the exhaust steam from the engine driving the exhausters is more than sufficient. No tar is deposited in the saturators, and the salt produced is of the first quality, and is snow white. The gas passes out of the saturator through the main, and is conducted to final coolers, where it is cooled to the required degree for the efficient extraction of the benzol vapor. The benzol is washed out of the gas in the scrubbing apparatus by means of creosote oil in the usual way. After the extraction of the benzol, a portion of the gas is returned to the ovens for heating purposes.

The scrubbing oil containing the benzol in solution, after it has been enriched to the required degree, is delivered to a distilling plant, where the benzol is extracted. The rich oil passes first into a superheater and then into the still proper, where the whole of the benzol contained in the oil is vaporized by means of live steam. The benzol vapor and steam pass through a cooler and condense, the benzol and water formed running into a separator, from which the benzol is run off in the form of a crude spirit.

The debenzolized oil leaves the still at the bottom, and passing through a series of coolers, is cooled down to its original temperature, and again employed for scrubbing the gas. The crude benzol is then washed and redistilled for the production of refined spirit. The whole installation is complete with all the necessary tanks for storing the various products, and with a water-cooling frame, to enable the water employed for cooling purposes to be used over and over again.

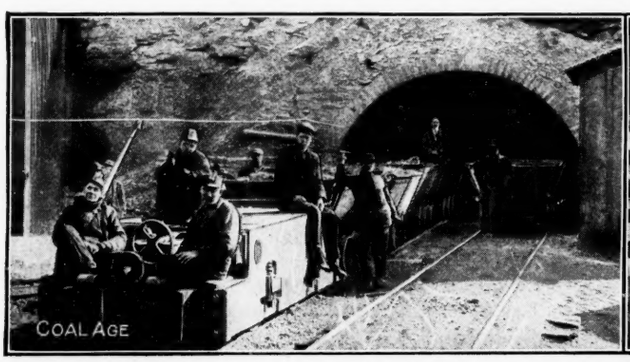
# The Stonega Plant in Western Virginia

*SYNOPSIS—The plant at Stonega is one of the finest in the State of Virginia.*

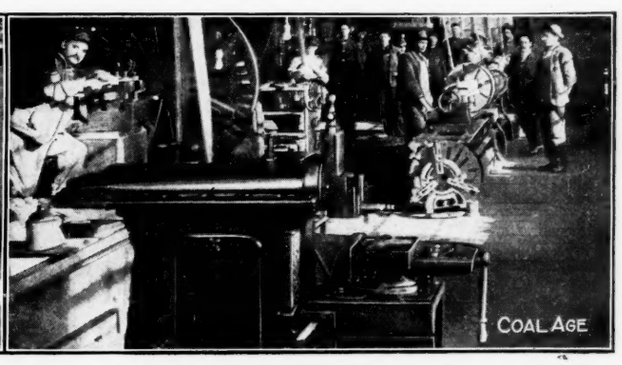
The Stonega colliery of the Stonega Coal & Coke Co. is located about five miles north of Appalachia, in Wise County, Virginia, just across the Cumberland Mountain from Letcher County, Kentucky. The coal mined is the famous Imboden seam, which averages 6 ft. 3 in. in thickness. It makes the best foundry coke on the market and is also a good domestic coal. There are four mines at Stonega which are all self-draining and free of gas. In three of the mines the coal is mined by hand, machines being used in the other. The coal is hauled by electric motors, and ventilation is provided by two Capell fans

There are 666 beehive coke ovens, 200 of which are equipped with a Covington coke-drawing and loading machine. A modern coke-crushing plant prepares the coke for domestic use.

Two of the three large tipples at Stonega supply the coke ovens, and are equipped with Stedman disintegra-

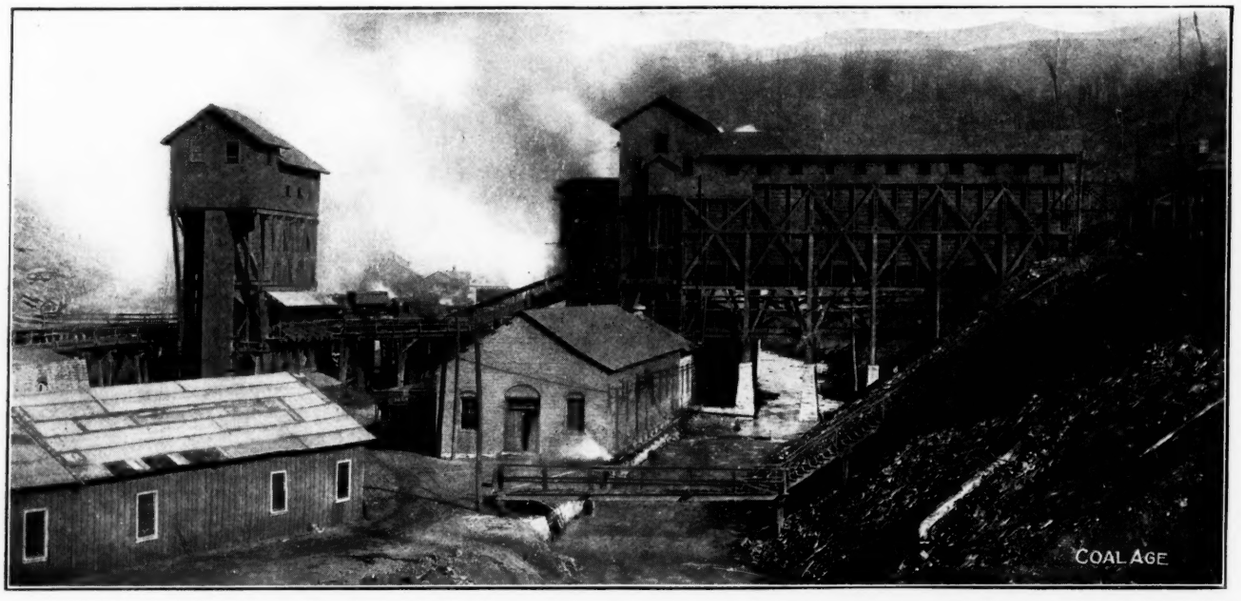



Arched Opening to No. 3 Mine. The Arch Is only 12 In. Thick




Inside of Machine Shop of Stonega Coal and Coke Co. and Interstate R.R.

tors. The third tipple ships coal, and coals engines for the Interstate R.R. The plant of the latter tipple has a large brick power house with stone foundation and trimmings which contain three 500-volt direct-current generators, which furnish power for the mines and one machine also supplying direct current, which furnishes energy for use in lighting the streets, dwellings and office buildings.




PLANT NO. 1 OF THE STONEGA COAL & COKE CO., STONEGA, VA. COKE CRUSHER ON LEFT, POWER HOUSE IN MIDDLE FOREGROUND AND TIPPLE ON RIGHT

To supply steam for these units is a boiler house containing a battery of ten Brownlow boilers.

### ALL KINDS OF REPAIRS ARE MADE IN THE REPAIR SHOP

A large machine shop equipped with lathes, shapers, planers, wheel-press, radial drill, bolt-and-pipe machine, shears, punch and steam hammer makes all repairs around the plant and also does all the work of that character needed by the Interstate R.R., which terminates at Stonega. At another repair shop all electrical repairs are made, armatures being wound and commutators built by the force engaged. At a large foundry castings up to 2000 lb. are made at this plant.

At Stonega, there are Presbyterian, Methodist-Baptist Union and a Catholic Church, and for colored people only, Methodist and Baptist Churches. A four-room graded school for white children and a two-room school for colored children supply the educational needs. For amusement a picture theater and lodge hall is provided. Pictures are run nightly, admission to the entertainment being obtained for 5 and 10c. There is a good library and a pool room, which was donated and is maintained by the company.

The corporation also has for the population of about 2000, a fine hospital in charge of Dr. C. B. Boyer, the company's physician, who is aided by two trained nurses.

The Stonega plant is in charge of C. G. Duffy, superintendent, and his assistant, H. B. Price, Jr. It is one of six plants located within a radius of seven miles. The headquarters of the Stonega Coal & Coke Co. is located at Big Stone Gap, Va.

THE STONEGA BASE BALL TEAM OF 1912

## Automatic Light Switch Signal

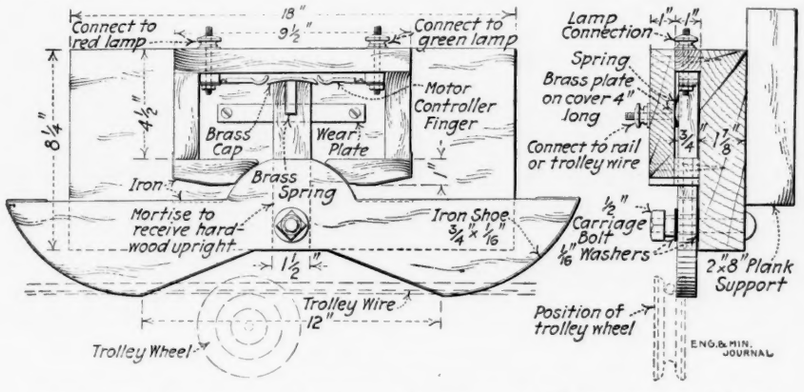
BY L. O. KELLOGG

It frequently happens in underground electric-haulage systems that the main drift branches a short distance from the shaft and that loaded trains are brought in over both branches. It then becomes necessary to signal to any incoming trains whether the track between the junction and the shaft is open or whether a train from the other branch drift is dumping at the pocket. This signaling is done automatically by colored lights in an exceedingly neat way at the Oliver mines near Ely, Minn. A switch is set in the back of the drift so as to be tripped by the trolley wheel of the incoming train and to flash a red light. The trolley wheel of the outgoing train usually flashes a green light. A train approaching on the other branch drift will stop if the motorman sees a red light and will proceed if he sees a green.

It is not entirely necessary to use the green light, but somewhat safer; for if two lights are used, the absence of

either a green or a red light indicates that something is wrong with the system, and the motorman will not proceed as he would if the mere absence of a red light was used to indicate a clear track. Only one switch is necessary, set where it will be operated by trains from both drifts. One or two sets of lights may be used, only one set being required, if a point can be had visible from a sufficient distance in both drifts.

The construction of the switch is shown in the drawing. It consists of a wooden box inclosing the contacts. A vertical pivoted finger is connected through the bottom of the box with two horizontal wings which the trolley wheels strike; the finger, thrown laterally by the movement of the wings, completes a circuit through the lamp of the proper color. The wings of wood are shod with iron where struck by the wheel and where they




AUTOMATIC SWITCH TO INDICATE POSITION OF UNDERGROUND MOTOR

strike the bottom of the box, in order to resist wear. The top of the wingpiece is shaped as an arc to fit the opening in the box, which is thus kept closed. The box itself consists of a wooden back and a wooden front piece screwed together through filling blocks which form the box sides. The finger, by means of the brass spring shown, maintains a constant contact with a brass plate on the inside of the box front piece, which is connected to one side of both lamp circuits. The spring connects with a brass cap on the finger, and this makes contact with one of two fingers taken from a motor controller. One of these connects with the other side of the red-light circuit, the other with the other side of the green light. In the case shown, the trolley current is used for the lights; if a separate lighting circuit were in service, connections could be as easily made to this. The device is mounted on a board parallel with the tracks.—*Eng. & Min. Jl.*

## Safe Boiler Support

The importance of safe boiler support is not generally recognized, says an editorial in *Power* for Mar. 3, 1914, and the boiler laws that have been enacted in the various states and municipalities, do not seem to have taken into account its influence as affecting the safe operation of boilers. Anyone familiar with boiler explosions will be sure to feel that if a boiler should fall down while under steam, an explosion would be almost certain to follow; yet it is rare to hear this cause advanced as the explanation of boiler explosions where other causes are not in evidence. It seems more than probable that a good number of mysterious boiler explosions, occurring with sound boilers and where there has been conclusive evidence that no overpressure existed, may have been due to the falling down of the boilers or their changing position to such an extent as to result in the breaking of the pipe connections, thus producing the explosion.

Investigation into the conditions surrounding the explosion of two sound boilers recently, seemed to indicate that the falling down of one of the boilers was the only reasonable explanation for the accident. These two boilers exploded simultaneously, the explosion of one having undoubtedly been the cause of the explosion of its mate. The tears through the shells of both boilers were similar, occurring through the top manhole reinforcement, which was of the outside pattern, and weak. The girth rivets at each end of the course that contains the manhole opening were sheared. All parts of the shell that were fractured were without evidences of defects, the tears being through the solid plate. Calculation showed that the structure should have stood about five times the load due to the steam pressure that was on the boilers at the time of the accident, and that there was not an excess pressure at this time was clearly indicated by the condition of the pop safety valves that were attached to the boilers. One boiler showed distinct marks on the manhole course of having been dented by a blow delivered to it by the manhole frame of the adjoining boiler when it exploded. From the nature of the breaks on these boilers, it is probable that the main steam connection on one boiler was broken by the falling down or settling of the boiler. The sudden opening and the resulting outrush of steam, caused a wave action of the water in the boiler, which resulted in its rupture girthwise and the manhole course lengthwise through the manhole reinforcement. This explosion probably would have been prevented if the boilers had been properly hung.

The Massachusetts and Ohio rules prescribe that boilers above 78 in. diameter be hung, and that the support be independent of the setting walls. This provision was evidently made for fear that such large boilers could not be safely supported on the setting walls, which is doubtless correct. It would also seem to be reasonable precaution to have all sizes of horizontal tubular boilers hung. The smaller size boilers are usually installed in the smaller plants where the condition of the setting is not as apt to be so closely watched as in the larger plants and small boilers for this reason are probably more likely to be exposed to the danger of explosion from improper support.

The American Boiler Manufacturers' Association, at its twenty-fifth convention, proposed that the Massachusetts Rules be modified in regard to the requirements for hanging boilers and that the boiler manufacturers be allowed to follow the present practice, which had been proved safe. Such a move would seem to be a step backward, and if any change is made it should be to require that the smaller sizes of boilers also be hung. It requires more than the mere statement of the boiler manufacturers to show that lug-supported boilers are safe, for there have been many instances to show that this means of support has often been the initial cause of boiler explosions.

## King Coal

By Robert H. Wilson*

A coal fire burns on my hearth tonight,
Outside is the frost and snow,
The stars are a-shiver with cold and fright
As they hear the north wind blow.

Jack Frost peers in at the casement frame
With a leering, bold grimace;
The fire cries out, "You're not in the game,"
And it flouts him to his face.

The Frost King mutters, and in his voice
Is a tone of gruff regret,
The coal laughs back, "You have no choice,
For I am the master yet!"

"If thou art King," said I to the coal,
"Tell me thy warrant, pray,
That aught to thy power should yield control,
Or bend to thy scepter's sway."

"And thou wouldst know," said the coal to me,
"My secret, then listen well,
For it is a tale of mystery,
And wonder I have to tell.

"I was conceived of the virgin Earth
When time had only begun,
Forests and jungles my place of birth,
'Neath the shine of a tropic sun.

"My cradle was down in a swampy fen,
Where the ichthyosaurus fed,
The diplodocous came from his den,
And guarded my trundle bed.

"Surges and billows, and roll on roll
Of shimmering light and heat
Wrapped me and filled me, body and soul,
Till my pulses wildly beat.

"I breathed the heat, and I drank the light
Till the glacial torrent's spume
Flooded and buried me out of sight,
Again in my mother's womb.

"Reincarnation! Wonderful theme!
But the marvel came to me
Of birth anew, like the mystic dream
Of the Brahminic devotee.

"Ho! for the craft of the sons of men,
Ho! for their cunning and skill,
Delving for treasures beyond their ken,
And molding them to their will.

"They searched me out from my dark, damp caves,
Braving my poisonous breath,
They brought me from 'neath the salt sea waves,
At risk of the fangs of Death.

"They gave me a kingdom, a crown, a throne,
And millions before me fall,
Trade and traffic my empire own,
And industry is my thrall.

"My hand directs the billowy course
Of the ocean-greyhound fleet,
My blood is life to the iron horse,
And strength for his flying feet.

"At touch of my magic—commerce feels
The spur of a thousand thrills,
I drive the shuttles, and turn the wheels
In thousands of shops and mills.

"I yield my life—though I reckon it not—
To defeat the demon Cold,
I quicken the fires in the smelting pot,
To purge the silver and gold.

"I warm the home of the millionaire,
And the hut of the Esquimaux;
Eyes dreamy with youth find pictures rare
In the depth of my ruddy glow."

* * *

"King Coal is a Suzerain Lord," I cried,
"With power on land and sea,
I yield him due homage, whatever betide,
For he warmeth my hearth and me."

*Saltsburg, Penn.

## Increase in Baltimore Harbor Facilities

The rivers and harbors appropriation bill, pending in Congress, is of wide significance to the coal trade of Baltimore. The bill contains a provision for the expending of $112,000 by the government in deepening the Baltimore harbor to 35 ft., making it possible for the largest merchant vessels and colliers of the United States Navy to load coal at the Maryland port.

In discussing the proposed legislation with Congressmen Linthicum and Talbott, of the Maryland delegation, President Daniel Willard stated that the Baltimore & Ohio will build an additional steel pier at Curtis Bay, which will double the capacity of the present facilities there. The time of construction, the cost of which will be more than $1,000,000, will be dependent upon the financial condition of the road. It is known, however, that the pier will be erected as soon as practicable.

Eastern coal operators, and particularly those doing business through this port, predict a rapid growth of the trade when the proposed extension shall have been put in operation. Baltimore is a logical point for handling a large volume of coal. It is also located near the coal fields of West Virginia, southwestern Pennsylvania and Maryland; and now that a low-grade route has been established, which makes it possible to handle the longest trains expeditiously and economically, a large increase in tonnage is anticipated.

Last year more than 3,000,000 tons of coal were dumped over the Curtis Bay pier, and the world's record for loading a vessel was established on Nov. 18, 1912, when the collier "Newton" was loaded with 7473 tons of coal in 3 hr. and 45 minutes.

# Dwelling Houses at the L. C. & N. Co.'s New Hauto Plant

By Edward L. Kellogg*

*SYNOPSIS—The gradual leaning toward better construction of workingmen's quarters is becoming more noticeable each year. It is generally conceded that comfortable houses do much to attract and hold a more desirable class of men. This article describes the introduction of hollow-tile at the L. C. & N. Co.'s Hauto plant and is probably the first application of this method in a mining community.*

It is so short a time since the building of modern model villages in America for workingmen has been gaining ground, that the broad principles which underlie such expenditure on the part of a corporation for such a purpose need stating and reiteration. The increasing difficulty of obtaining satisfactory help for industrial

Front View of the Two-Story House

plants is compelling managers to analyze among other things the living conditions of their men, and they find that high-grade workmen of today are not content with wooden shacks in the middle of bare ground covered with refuse, cans and ashes; and will not stay in towns where housing conditions are poor.

There is, as is well known, a large floating class of workmen who only stay a short time in each place, leaving under the slightest pretense. The scarcity of labor has made reliable men more particular and most of these prefer to work for lower wages in towns where they can get better and more attractive homes.

### Some Advantages of Improved Dwellings

It has long been noted that under average conditions the loss of time from sickness has been 10 per cent., but in model villages is almost nothing, while the death rate is one-quarter to one-half what it is under ordinary conditions. It is easy, therefore, to realize that the better physical, mental and moral conditions of the men make them more efficient workmen.

From the increased efficiency, additional profits come to the employer sometimes in so large amount that the management feels justified in maintaining a model village at considerable actual expense. Others place rentals at a markedly lower figure than would be justified, if an ordinary real-estate investment proposition. The accompanying table, prepared as a rough guide, has been so frequently called for by managers of large corporations, that it will no doubt be welcomed by others. The cost of land mentioned pertains specially to country districts where land is cheap.

SCHEDULE OF COST AND RENTALS OF HOUSES FOR WORKINGMEN

| Cost of House | No. of Rooms | Interest at 5% | Annual Total Expense | Rent per Month | Rent per Year | Annual Surplus % Income |
|---|---|---|---|---|---|---|
| | | | Sink and Toilet | | | |
| $750 | 3 | $37.50 | $65.10 | $6.00 | $72.00 | 10 |
| 860 | 3 | 43.00 | 74.80 | 7.00 | 84.00 | 11 |
| 975 | 3 | 48.75 | 84.80 | 8.00 | 96.00 | 12 |
| 1100 | 4 | 55.00 | 95.40 | 9.00 | 108.00 | 12 |
| 1200 | 4 | 60.00 | 104.50 | 10.00 | 120.00 | 13 |
| 1300 | 4 | 65.00 | 112.80 | 10.50 | 126.00 | 10 |
| 1400 | 4 | 70.00 | 121.10 | 11.00 | 132.00 | 9 |
| | | | Bath, Sink and Toilet | | | |
| 1500 | 5 | 75.00 | 130.40 | 12.00 | 144.00 | 9 |
| 1600 | 5 | 80.00 | 139.30 | 13.00 | 156.00 | 10 |
| 1725 | 5 | 86.25 | 149.10 | 13.50 | 162.00 | 8 |
| 1825 | 5 | 91.25 | 157.40 | 14.00 | 168.00 | 6 |
| 1925 | 5 | 96.25 | 167.50 | 15.00 | 180.00 | 7 |
| 2025 | 5 | 101.25 | 174.80 | 15.50 | 186.00 | 6 |
| 2150 | 6 | 106.25 | 183.35 | 16.00 | 192.00 | 4 |
| 2250 | 6 | 111.25 | 191.75 | 16.50 | 198.00 | 3 |
| 2350 | 6 | 116.25 | 199.95 | 17.00 | 204.00 | 2 |
| 2475 | 6 | 123.75 | 211.30 | 18.00 | 216.00 | 3 |
| 2575 | 6 | 128.75 | 220.90 | 19.00 | 228.00 | 3 |

Taxes are figured at the usual 1 per cent of cost of house and land. Repairs are figured at cost of one month's rent, standard practice for even less durable construction than hollow tile.

Collection expenses at 5 per cent. of rent collected.

Sinking fund at 1½ per cent. of cost of house only. At 5 per cent. compound interest a 1½ per cent. sinking fund will repay cost of house in thirty years.

In many of the coal-mining towns, the housing of miners is poor and commonplace, due to several reasons:

(1) The lack of interest of the actual operators of the mines, and the absenteeism of the responsible heads and owners of the companies, and

(2) The feeling on the part of the managers that the perhaps early exhaustion of the coal seams will bring an end to the value of real property.

A leading executive recently said to me: "Our company has over one hundred houses in this town that should not be occupied by human beings. I am constantly asking for new houses, as they pay a fair interest on the investment, but my directors will not authorize the expenditure."

### Reasons for Adopting Permanent Construction at Hauto

Vice-President Ludlow, of the Lehigh Coal & Navigation Co., with headquarters at Lansford, Penn., takes great interest in his company's employees. His company's experience with wooden houses and the heavy repairs necessary on them, has led him to investigate other more durable methods of construction. The thick veins of coal belonging to this company promise work for scores of years, so that more durable construction than wood was economically important.

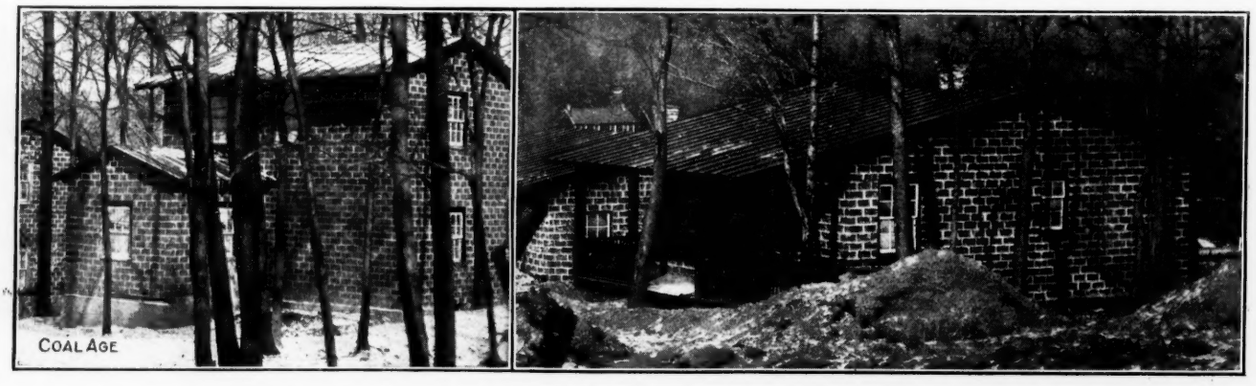
The building of the great electric plant at Hauto, near Lansford, to use up the long accumulating millions of

*Standard Buildings, Inc., 70 East 45th St., New York.

tons of waste coal in generating electricity on an enormous scale for surrounding towns and cities, gave Mr. Ludlow an opportunity to carry out his idea of a model village for the employees of the plant.

Standard Buildings (Inc.), of New York, an association of experts on the laying out, designing and erecting of model villages for workingmen, was asked to do the work. This company makes a specialty of building with hollow tile, and in the effort to reduce the cost so as to compete with good wood construction, had devised in coöperation with the National Fireproofing Co., a new hollow tile with a pleasing exterior surface, warm red in color, something like tapestry brick, at one-third the cost, thus doing away with the expensive exterior stucco. The unit of tile, 6x12-in. face by 6 in. thick, with double air spaces, will, where properly laid with portland cement, make an impervious masonry wall, warm in winter and cool in summer.

A number of houses illustrated herewith have just been finished. The appropriation available called for the strictest economy; all architectual features had to be omitted, but the result is nevertheless most interesting. The delightful warm, red brick color of the roughened wall surface, and the size of the units with the wide grey mortar joints, make a pleasing exterior. The roofs are of heavy durable prepared roofing, matching the walls in color, and put on with heavy battens painted the same color. The exposed woodwork is stained a warm brown and the window sashes painted cream white.




REAR VIEW OF THE TWO-STORY HOUSE ON THE LEFT AND THE BUNGALOW TYPE ON THE RIGHT

### TYPES OF BUILDINGS USED

Three types of houses have been erected, as illustrated:

(1) *Bungalows* containing a large living room, two double bedrooms, of over 800 cu.ft. of air capacity each, and a kitchen. There is a center chimney, a water closet, a soapstone washtub and sink. The cooking range will heat the house from the living room in winter and in summer can be moved into the kitchen. There is a large front porch and a smaller one in the rear. The hollow tile in these bungalows is smooth on the interior and is white-washed, doing away with the use of plaster and presenting a most durable surface practically proof against wear and tear.

(2) *Five-Room, Two-Story Houses.* The rooms in the second story are full height. There is a living room, dining room, kitchen, two bedrooms and bath. Also a cemented cellar and excellent hot-air furnace.

(3) *Six-Room Houses,* similar to those with four rooms, but with a larger living room and three bedrooms. Good closets are provided in all these houses. The five- and six-room houses are plastered in the usual way with white, hard finish for painting or tinting.

The illustrations taken in mid-winter, with the streets dug up for water pipes, give little of the real beauty that will be apparent later when a year or so has passed, and nature has again taken hold, the grass grown and the leaves out, and human interest apparent and active. But this experiment has already shown that given an interesting and durable material, and skilled design limited, to proportions alone, will together make a beautiful whole. The credit for part of the idea of the new wall material for low-cost houses, should be given to that eminent business man and philanthropist, J. G. Schmidlap, of Cincinnati, who has invested half a million dollars in two housing companies in his own city. His remark to the president of Standard Buildings, Inc., a year ago: "You will not be able to lower the cost of workingmen's houses until you find some cheaper structural material," led to the experiments that finally produced the new hollow tile, whose first use is illustrated herewith.

## The Scottish Coal Ports

The North British Railway Co. has been interested in the export of coal from the rich Fifeshire fields, almost since the beginning of coal mining. From a charter dated March, 1291, it appears that coal has been worked in that county for more than six centuries. Many of the Fifeshire seams extend for considerable distances under the Firth of Forth, and it is estimated that the quantity of coal still to be worked is 3,742,336,644 tons, according to a Royal Commission, which sat in 1903-5. The total output of the county in 1907 was 8,530,043 tons, as compared with only 5,944,631 two decades ago.

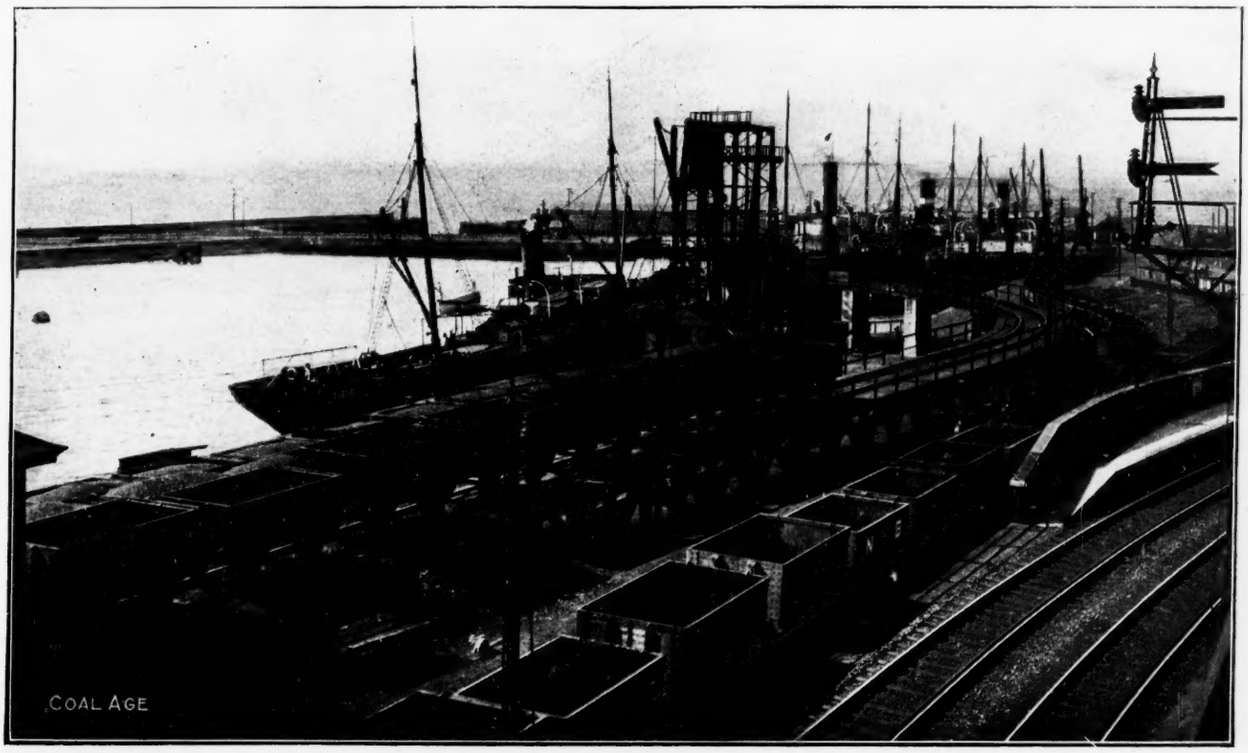
Soon after the acquisition of the original dock at Methil by the North British Railway, in 1889, the traffic of the port increased to such an extent that it was found necessary to extend the facilities for handling coal. The construction of the outer dock, which has an area of 6½ acres, was completed in January, 1900. The dock has a depth of water at high tide of 27 ft., and 22 ft. at low; its cost was about $1,500,000.

The coaling facilities consist of three Armstrong Whitworth coal hoists of the most approved types with high-level runways for the empty wagons. There is also a 25-ton hydraulic coaling crane, which can lift the loaded

wagon bodily and empty it direct into vessels, and also work alongside one of the coal hoists so that a vessel can be loaded by both methods simultaneously.

There are 12 miles of storage sidings round the docks and the whole are lighted by electricity to facilitate work at night. With all the hoists working there is no difficulty in handling 70,000 tons a week and a record shipment for one week was accomplished on July 8, 1911, when 75,595 tons were shipped; the record monthly shipment was made in September, 1911, when 311,883 tons were handled.

The total tonnage shipped from the Methill Docks during 1909, was 2,691,109 and in 1910 it was 2,926,210 tons. The traffic at Methil has again outgrown the facilities and a third dock is nearing completion, which has a water area of 16¼ acres and will be equipped with six additional miles of sidings. The hydraulic hoists will be capable of lifting a weight of 35 tons to a height of 45 ft., above the quay level and tipping into vessels. When this dock is completed the loading capacity of the port will be increased to 160,000 tons per week.




General View of the Burntisland Dock in Scotland

### Other Large Docks

The other important outlet of the Fifeshire coal field is Burntisland, where the docks are also the property of the North British Ry. Co. In 1889 the coal tonnage shipped from this port was only 739,307, while in 1908 it was 2,164,293 tons, and in 1910 it was 1,128,218 tons.

There are two docks, the old and the new, the former having a depth of 28¼ ft., and the latter 22½ ft. Both docks are fully equipped with the latest coaling appliances and there are no fewer than ten hydraulic hoists, which are said to be the first of their kind erected in Scotland, while experiments have been made with antibreakage appliances with satisfactory results. The record shipment of coal for a week was that for Aug. 7., 1909, when 68,100 tons were shipped, and the record month was October, 1908, when 256,000 tons were put into vessels.

## Automatic Stone Dusting

H. W. G. Halbaum, in a paper before the North of England Institute of Mining Engineers, offers some interesting notes on stone dusting. Instead of employing a number of men to clean up the coal dust and distribute the stone dust every night, he suggests that the inert dust be stored at the surface in such a way that it will be subjected to the suction of the downcast shaft (as coal dust now is from the screens). Secondly that another supply of inert dust should be taken nightly to the haulage landing of each district.

During working hours the cager is provided with a number of shallow trays made of galvanized sheet iron, and fitting the tops of the full cars. In each of these trays he places a few handfuls of the inert dust. The tray would prevent the coal dust from escaping from the cars, while the inert dust reposing in the tray would be shaken up as it traveled, and carried away and deposited by the air current. This would obviate the cleaning-up of the haulageways each night, since the deposition of coal dust would be prevented, and the roads would be efficiently stone-dusted.

This seems to Mr. Halbaum the logical conclusion to the study of the distribution of dust, whether it be formed from coal or stone. Such a method would have the twofold effect of practically preventing the deposition of coal dust on the main haulageway and covering instead its whole rubbing surface with fine inert dust. If the buoyancy of the inert dust be sufficiently marked it should penetrate into obscure parts of the mine, which have hitherto been accessible only to coal dust.

# Mine of Birmingham Fuel Co. at Townley, Ala.

EDITORIAL CORRESPONDENCE

*SYNOPSIS—A description of the Townley Mine; its location, equipment, working methods and output.*

The mine of the Birmingham Fuel Co. is located geographically at Townley, Walker County, Ala., on the St. Louis and San Francisco R.R., 52 miles northwest of Birmingham, and geologically in the northwest corner of the Warrior coal field. The mine is under the general supervision of John R. Pill, president and general manager, and under the direct supervision of John B. Monfroy, superintendent. The writer is indebted to the two gentlemen mentioned for their coöperation in preparation of this article.

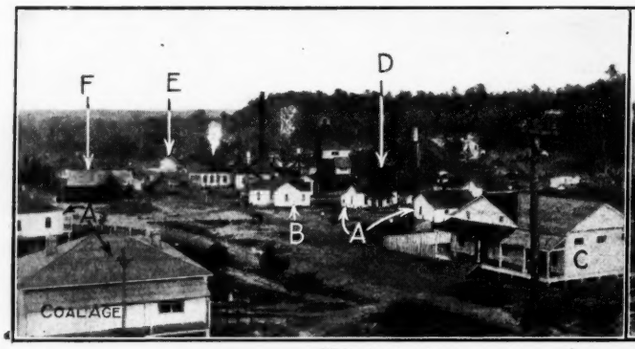



FIG. 1. GENERAL VIEW OF PLANT

A, dwellings; B, office; C, commissary; D, washer; E, bath house

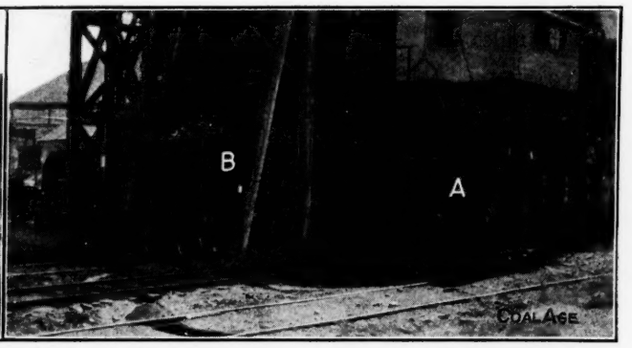



FIG. 2. METHOD OF LOADING

A, domestic lump over 6-in. screen; B, steam through 6-in. screen.

The Jagger Seam, which is worked in this mine, is one of the lowest seams of the Warrior field and is of workable thickness only in the northwest corner of the field. The coal occurs in irregularly shaped basins, the limits of which can only be ascertained by drilling. Normally, the coal lies flat with local variations and, as a rule, it is of normal thickness, except near the boundary of a basin, where it thins rapidly and turns up to the surface. It is impossible to ascertain the limit of a basin by cutting the outcrop, as the seam on "turning up" usually plays out. The approximate boundary of a basin is shown usually by the appearance of the bed rock on the surface.

The roof of the seam consists of shale of average strength and the floor of firmer shale. At some points of the field a stratum of bone coal, 6 in. to 8 in. in thickness, occurs in the bottom.

The coal is an excellent domestic and steam coal and finds a ready market. The steam sizes bring from $1.20 to $1.50 per ton, and the lump from $1.75 to $2.25 per ton, f.o.b. mine, the prices varying with the seasons. Fig. 2 shows two grades being loaded, lump and steam, while Fig. 6 is a photograph of a car of fancy lump over 6-in. shaking screen.

Figs. 1, 3 and 4, which are photographs of the plant from different points of vantage, show the general arrangement of the buildings. The reader's attention is particularly directed for a moment to the general neatness evidenced by the photographs. It might be mentioned in this connection that "good order" is characteristic of the plant both on the surface and inside of the mine.

The boiler plant consists of four 165-hp. Atlas return-tubular boilers. The boilers are equipped with four 16-in. turbo-blowers. The water is fed from a 500-hp. Star

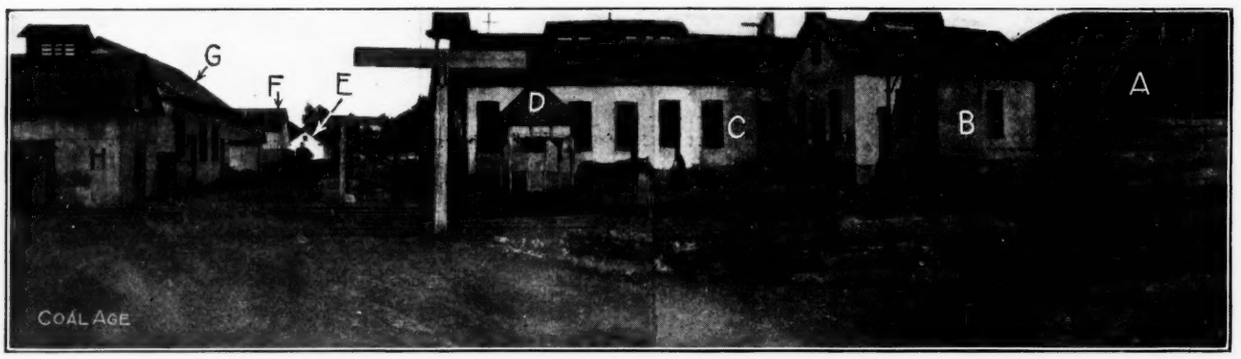



FIG. 3. VIEW OF PLANT FROM RAILROAD SIDE

A, headframe; B, hoist-engine room; C, compressor room; D, drinking fountain; E, bath house; F, carpenter shop; G, machine shop; H, blacksmith shop.

vacuum heater which is on the exhaust from the air compressors. An important economy is effected in the boiler plant in that only the washed slack which passes through a ⅜-in. screen is used in firing, except when this supply is insufficient, at which times quantities of the larger sizes are used. This method utilizes principally the fine product, which is of the lowest market value. All boiler coal is delivered to the boilers from the washers by flume *g*, shown in Fig. 4. Flume *h* disposes of the extreme fines from the boiler coal.

The power plant consists of three Norwalk compressors, each having a capacity of 900 cu.ft. per min., which supply compressed air for the coal punchers and pumps; and a Janney direct-current generator, which furnishes lights for the principal buildings and the shaft bottom.

The headframe is arranged for self-dumping cages, which dump directly into the shaking-screen bin. The cages are operated in balance by a first-motion Crawford & McCrimmon hoisting engine.

The fan, shown at *d* in Fig. 4, is a 16-ft. Crawford & McCrimmon fan. The fan house is of the Kahn system of reinforced-concrete construction, and is arranged so that the direction of ventilating current can be reversed. It is also equipped with explosion doors.

The washer, a two-jig Montgomery type, washes everything from 3 in. down. The raw coal is separated before being washed, and all coal passing through a 1½-in. revolving screen is washed in one jig and larger sizes in the other jig. Chutes and conveyors are so arranged that the entire washed product, or the sizes above 1½ in., can be put in with the nut coal or loaded separately to suit the demand. All coal that is not washed is hand picked. (See Fig. 2.)

The washer refuse is very economically disposed of at this plant. It is hauled from washer to dump over the track shown at *l*, Fig. 4, by means of a tail-rope which winds on a drum equipped with friction on the driving shaft of the jigs. The rope can be seen in the photograph. The refuse car automatically dumps at the proper place.

There are two features of the surface plant that are not in the strict sense of the word necessities for a coal mine, but are the ear-marks of an operator that has the best interest of the mines at heart, they are: The drinking fountain, shown at *d*, and the bath house, shown at *e* in Fig. 3. The fountain is fed, by means of a compressed-air line, from a stream that was struck in the main shaft. The fountain is of concrete construction. The bath house is not yet in use, but is nearing completion. It is also of concrete construction, and when completed will be equipped with sufficient showers and steel lockers to accommodate the workmen. In keeping with modern practice, the name of each building is plainly painted thereon.

The main, or hoist, shaft is 10x20 ft., 126 ft. deep, with three compartments, two for hoisting and one for

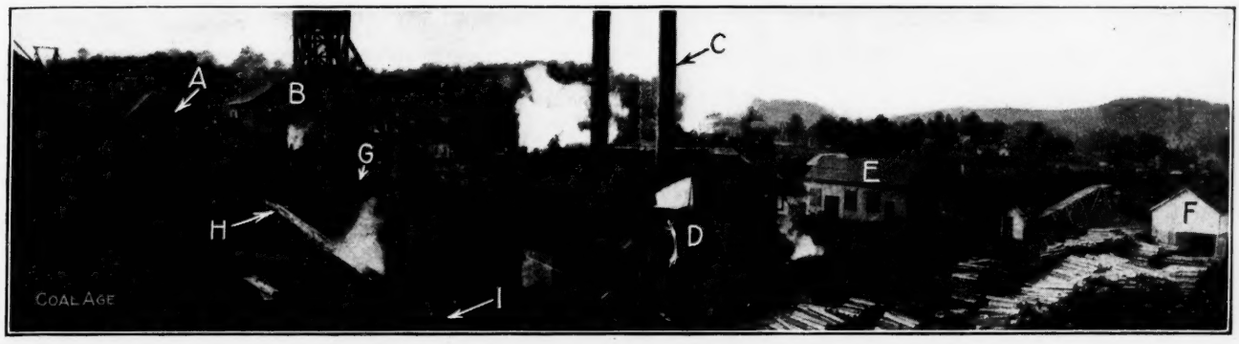



FIG. 4. VIEW OF PLANT FROM MUCK DUMP

A, washer; B, headframe; C, boilers; D, fan; E, machine shop; F, carpenters' shop; G, flume for boiler coal; H, flume for wasting extreme fines from boiler coal; I, track for washer-refuse car.

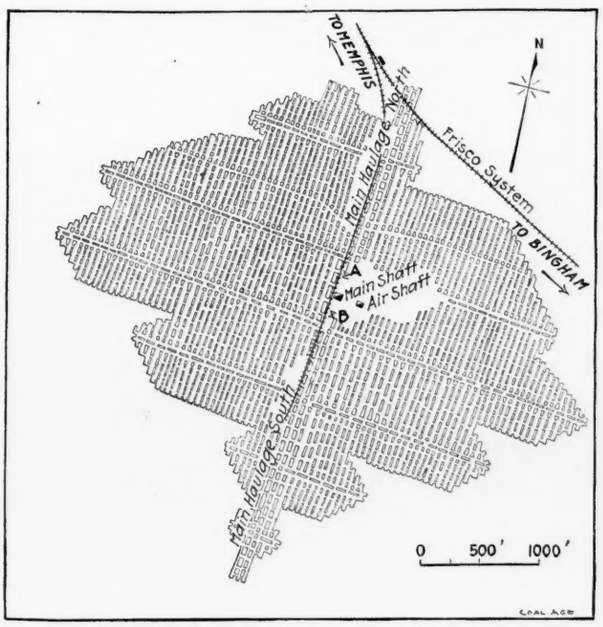



FIG. 5. UNDERGROUND PLAN OF BIRMINGHAM FUEL CO.'S TOWNLEY MINE

FIG. 6. CAR LOADED WITH FANCY LUMP PASSED OVER A 6-IN. SHAKING SCREEN

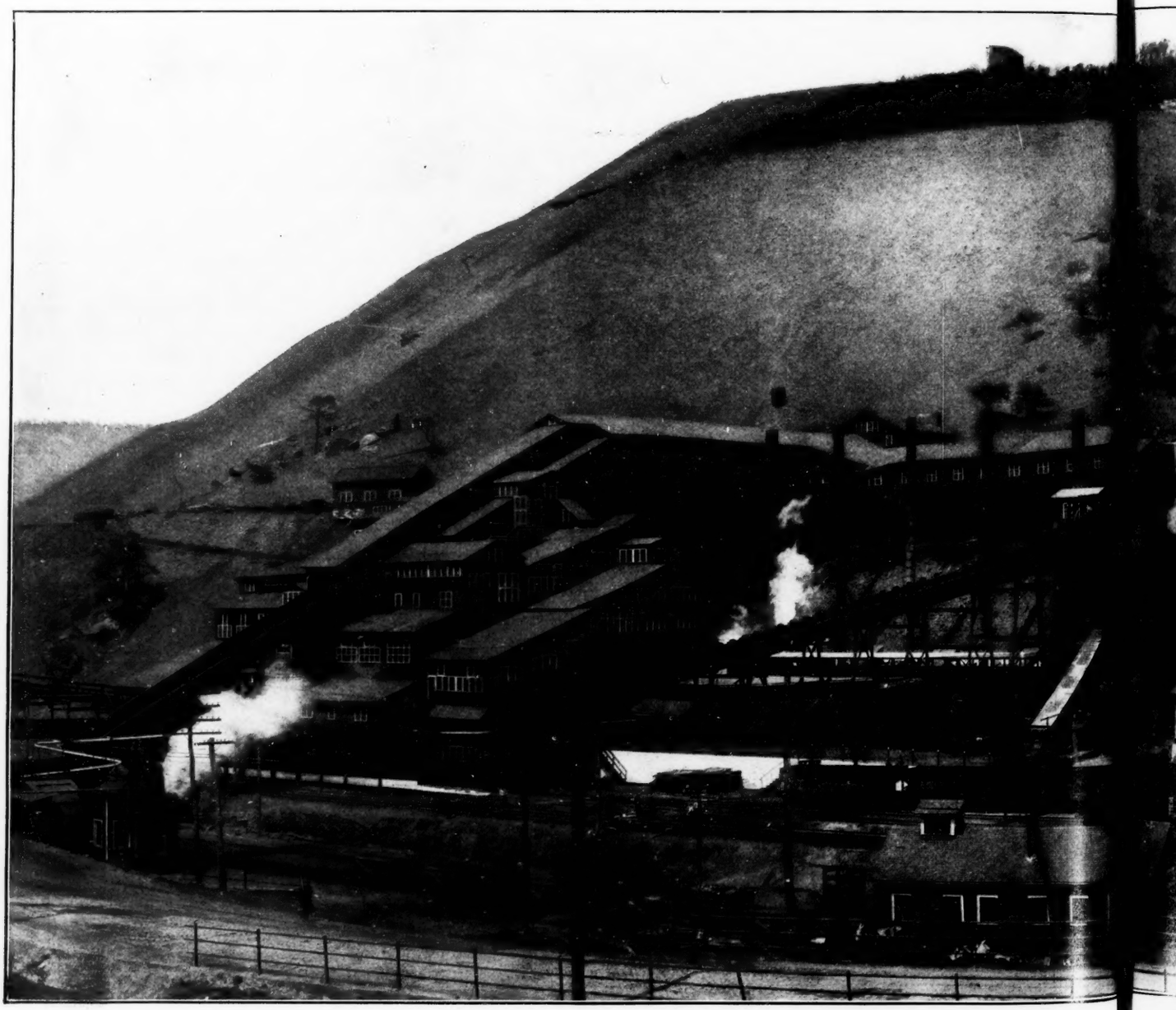
pipes, etc. The timbering is of pine. The air, or fan, shaft is 100 ft. east of the hoist shaft. It is 10x14 ft., with two compartments, separated by a reinforced-concrete wall. One compartment is connected with the fan and the other used for a manway. The manway compartment is provided with a steel ladder built in short flights. It is used in emergencies only, as the men are let into and out of the mine by means of the cage.

For the protection of life and limb, and for the sake of general neatness, all timbers and ribs of main headings adjacent to the main shaft, as well as those of passages to the manway, are kept well whitewashed.

For the protection of the shaft and surface plant, a 60-ft. pillar was left between the main haulageway and air courses on both sides of the shaft to the first headings. Sufficient pillar was also left around the airshaft for its protection. The reader will note, upon reference to Fig. 5 that main haulageways are driven north and south from the shaft. These haulageways divide the basin, as nearly as possible, into equal parts. They are driven 18 ft. wide with a 15-ft. air course on both sides, and a 20-ft. air-course pillar.

From these main entries, at intervals of 400 ft., double entries are turned at right angles. The double entries are driven 13 ft. wide with a 20-ft. pillar between. These double entries, as well as the main entries, are driven on sights. Rooms are turned from the double entries on 35-ft. centers, and the coal mined by the room-and-pillar-advancing method, with 25-ft. rooms and 10-ft. pillars. The rooms are necked off 8 ft. wide at the heading and substantial stumps are left alongside the heading. Such pillars as it is possible to rob are robbed on the retreat.

In mining, the coal is undercut with Ingersoll-Sergeant coal punchers and shot down with black powder. In



CAMERON COLLIERY OF MINERAL RAILROAD

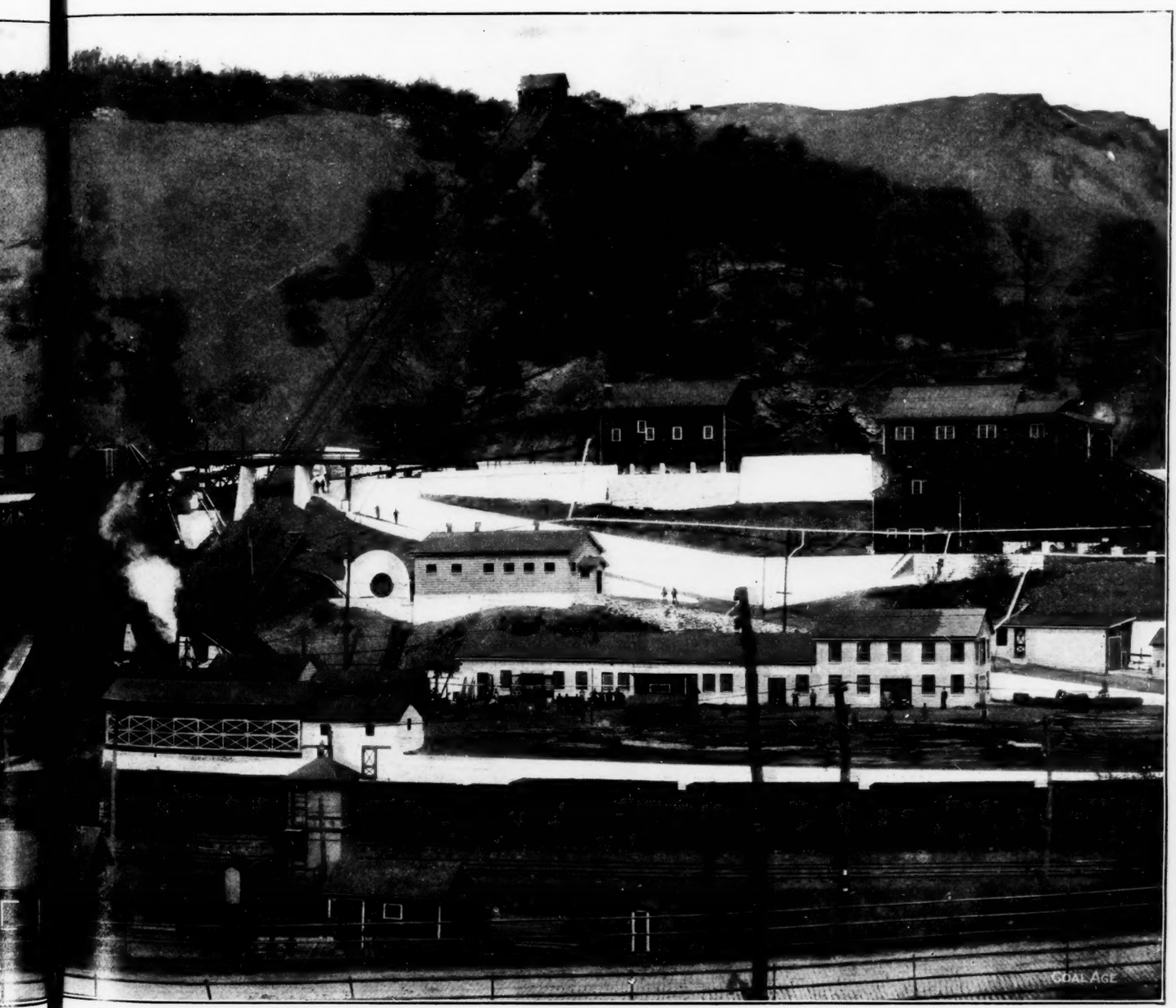
shooting, the holes are drilled up through the shale parting near the top, and the powder bedded in and above the parting. Charges strong enough to break the coal down, but not to scatter it, are used. In this way it is possible in loading the coal to uncover the parting and throw a large part of it into the gob, without it becoming mixed with the main body of loose coal, and, at the same time, correct shooting yields a larger percentage of lump coal. In this mine the average yield per keg of powder is 90 tons, which represents an actual shooting charge closely approximating 2c. per ton.

The ventilation is a combination of the split and continuous systems. The mine is divided into four quarters by the ventilation scheme, and each quarter, or corner, is ventilated by a separate split of air, which passes, without further splitting, through the workings. This system gives each section of the mine a sufficient supply of fresh air and necessitates only two overcasts. These overcasts will be noted on Fig. 5, on the main haulageways on either side of the hoist shaft at points *A* and *B*. In order to prevent the main shaft from freezing, the fan is used as a blower during the severe winter months.

The mine does not make any considerable amount of water; therefore the pumping problem is comparatively simple. Three pumps are maintained which have a combined capacity far in excess of the demands. They are all Camerons—one No. 10A, one No. 8 and one No. 3.

The mine has an average daily output of 1200 tons, which is undercut with 16 punchers and hauled by 26 mules. The high yield per mule is made possible by the excellent condition of the tracks. The mules are stabled outside and are taken into the mine on the cages.

The mine employs a total of 315 men, 24 of whom are used outside and 291 inside.




AND MINING COMPANY, SHAMOKIN, PENN.

## Anthracite Coal and the Public

The *Philadelphia Public Ledger* of Mar. 20 prints the following editorial under the title, "An Invisible Hand Takes Heavy Toll on Anthracite:"

Nothing but a long and tedious lawsuit can decide whether the Lehigh Valley maintains a coal trust. But no trial is necessary to convince all consumers of anthracite that they pay too much for it.

The United States census figures of 1910 showed that the average value of a ton of anthracite loaded on cars at the mines was $1.86. That the price included the royalty paid by the operators to the owners of the coal.

To bring a ton of anthracite from the mines to Philadelphia costs from $1.70 to $2 a ton. It is true that the census figures for the value of a ton of mined coal did not include interest on the enormous sums invested in the properties.

After allowing for a substantial rate of interest and after establishing a sinking fund for the exhaustion of the mines, the difference between that and the more than $7 which the consumer pays is entirely too much.

Somewhere an invisible hand appears to reach out and collect a heavy toll on every ton of anthracite between the time it leaves the mine and the hour it is put into your cellar. Whose hand is it? To whom does that toll go?

This we do know, that of all the railroads in America the anthracite companies as a group are much the most prosperous. Lackawanna's 20 per cent. dividend, Jersey Central's 12, Lehigh Valley's 10, Delaware & Hudson's 10, and Reading's 8, show that these carriers thrive no matter how hard other roads struggle to make both ends meet.

Perhaps those invisible hands which collect the heavy tolls on anthracite belong to the coal sales companies, for they also thrive mightily and pay big dividends on a capital stock distributed free to the shareholders of at least two coal railroads.

In answer to the above statements, Eli Conner, of Philadelphia, makes the following reply:

Mar. 20, 1914.

Editor "Philadelphia Ledger,"
Philadelphia, Penn.:

Dear Sir—Noting your editorial in this morning's "Ledger" entitled "An Invisible Hand Takes Heavy Toll on Anthracite," I desire to call your attention to the unfairness of some of your statements.

I hold no brief from any of the anthracite corporations, but 20 years' experience in a managerial capacity, besides frequent professional engagements in that region, gives me intimate knowledge of the conditions governing the industry. I believe the "Ledger" is fair enough to justly present the situation to its readers.

The cost of producing anthracite coal and the prices realized by the mining companies therefor, was exhaustively set forth in House of Representatives Document No. 1442, 62d Congress, entitled, "Increase in Prices of Anthracite Coal Following the Wage Agreement of May 20, 1912." A statement is given in this document showing "operating cost per ton of 2240 lb. at collieries, not including royalties, taxes, sinking fund, interest on investments, or general office expenses," of seven of the largest producing corporations, whose aggregate output in 1911 was 35,382,545 tons, or about 52 per cent. of the total output of the whole anthracite region. The average cost of producing this large amount of coal on the above basis was, in 1911, $1.897 per ton. The wage increase of 1912 was computed at an average for the whole region of about 9c. per ton, which, added to the 1911 average, brings the cost up to $1.987.

The items excluded from the statement above quoted, namely royalties, taxes and sinking fund, but omitting interest on investments, would throughout the region average at least 25c. per gross ton, bringing the cost up to $2.337 per ton at the mines, or 0.477c. per ton more than the cost figure quoted in your editorial, $1.86.

The tendency in the production of anthracite coal is toward constantly increased costs, due to the general increasing "cost of living"; to the greater amount of coal that must be won from thin beds, which in order to be mined at all necessitate the removal of large quantities of rock to make working height; to the greater depths and longer distances the raw product must be transported underground; and to the fact that to properly conserve the mineral, it is necessary to mine as they are encountered in downward development, thin and lean beds at an actual loss, or else leave them in such a state that by reason of extracting beds beneath them they cannot hereafter be recovered; in other words, destroy them for all time.

Therefore, it is probable that the general average cost of producing anthracite coal at the present time is above the figure quoted, $2.337. There are, to be sure, companies whose mines are exceptionally favored by natural conditions, resulting in lower costs than this, but a general average is a fair one.

Now as to the other statement contained in your editorial, the price charged the consumer, over $7 per ton. You do not qualify this statement, merely comparing it with the quoted cost of $1.86. This is quite misleading. While it is true that the sizes of coal known as domestic sizes, namely, broken, egg, stove and chestnut, are retailed at the quoted figure above, these sizes constitute but about 60 per cent. of the output. In other words, to produce an average ton of anthracite, 40 per cent. is in the so called steam sizes, known in the trade as pea, buckwheat No. 1, No. 2 and No. 3, mustard seed and screenings, which sizes are all, with the possible exception of pea, byproducts of the industry, and must be sold in competition with bituminous coal.

The price realized by the anthracite-mining companies is, therefore, the average of all the sizes sold. On the basis of 60 per cent. domestic sizes and 40 per cent. steam sizes, and at the market prices prevailing in 1913, after deducting selling expenses, the average price realized by the producers of the whole anthracite region "at the mines" would not exceed $2.85 per gross ton.

The question of the freight rate for transporting anthracite coal to market is another matter that will doubtless be solved in due time, but the fact should not be lost sight of that there are many mines now being operated at an actual loss, which loss is partly recouped from the freight profit. If this latter is greatly reduced, the unprofitable mines must necessarily be abandoned. The remaining mines will then be unable to supply the demand for anthracite coal, and as a natural consequence the price will go still higher, and the last state of the consumer will then be worse than the former.

ELI T. CONNER,
Mining Engineer.
Stephen-Girard Building, Philadelphia, Penn.

## Explosives in Coal Mines Order

Secretary of State R. McKenna recently issued an amending Explosives in Coal Mines Order, under date of Feb. 10, 1914, in pursuance of the power conferred by Sec. 61, of the Coal Mines Act, 1911. By this order, the explosive "Bellite No. 4," of the order of Sept. 1, 1913, is withdrawn from the schedule, another "Bellite No. 4" being substituted therefor. Also, the explosive "Sheppey powder" of the Order of Nov. 25, 1913, is withdrawn from the schedule.

The Order of Feb. 10, 1914, adds six new explosives to the permitted list of the previous schedules. The added explosives, which have passed the new Rotherham test, for Canada, are as follows:

**Bellite No. 4**—Composition (parts by weight): Nitrate of ammonium, 68-64; di-nitrobenzol, 15-13; chloride of sodium, 21-19; moisture, 1. Permitted weight of charge, 18 ounces.

**Faversham Powder No. 2**—Composition (parts by weight): Nitrate of ammonium, 48.5-45.5; nitrate of potassium, 25-23; tri-nitrotoluol, 11-9; chloride of ammonium, 19.5-17.5; moisture, 1. Permitted weight of charge, 24 ounces.

**Kent Powder**—Composition (parts by weight): Nitroglycerin, 25-23; nitrate of potassium, 33.5-30.5; woodmeal (dried at 100 deg. C.), 31-28; oxalate of ammonium, 11-9; moisture, 6-3. Permitted weight of charge, 32 ounces.

**Monarkite**—Composition (parts by weight): Nitroglycerin, 13-11; nitrocotton, 0.5; nitrate of ammonium, 51-48; nitrate of sodium, 8.5-6.5; chloride of sodium, 26-23; starch, 5-3; mineral jelly, 2.5-1.5; moisture, 2. Permitted weight of charge, 26 ounces.

**Monobel, No. 1**—Composition (parts by weight): Nitroglycerin, 9.5-7.5; nitrate of ammonium, 70-66; wood-meal (dried at 100 deg. C.), 9-7; chloride of sodium, 16-14; moisture, 2. Permitted weight of charge, 10 ounces.

**Swale Powder**—Composition (parts by weight): Nitroglycerin, 20-18; nitrocotton, 1.5-0.5; tri-nitrotoluol, 5-3; perchlorate of potassium, 38.5-36.5; wood-meal (dried at 100 deg. C.), 10-8; oxalate of ammonium, 29-27; moisture, 2. Permitted weight of charge, 20 ounces.

**The full list of permitted explosives will be given next week.**

## Half-Million Dollar Experiment Station Proposed for the Bureau of Mines at Pittsburgh

Plans for the proposed $500,000 experiment station of the U. S. Bureau of Mines, to be located in Pittsburgh, Penn., have been approved by the commission appointed by Congress for that purpose. The Federal Government now owns the property upon which will be erected a group of buildings, especially designed and adapted for the carrying on of the mine-safety work and other investigations in which the Bureau of Mines is interested.

Congress, a year ago, in the Public Buildings bill, authorized a new home for the Bureau of Mines, to cost $500,000. It is now expected that Congress, in its present session, will make a specific appropriation so that construction work may begin. It is hoped that contracts may be let by July 1.

The commission that approved the plans consists of J. A. Holmes, D. C. Kingman, chief of engineers of the U. S. Army and O. Wenderoth, supervising architect of the treasury. The State of Pennsylvania has appropriated $25,000 for coöperation in establishing this experiment station, and has appointed a state commission, consisting of James E. Roderick, chief mine inspector, Dean W. R. Crane, of the mining department, Pennsylvania State college, and W. H. Caverly. This latter commission has tentatively approved the plans.

The proposed site consists of nearly 12 acres of land, part of it on the higher level of the city streets and part of it on the level of the B. & O. R.R., which will furnish adequate facilities for passengers and freight traffic.

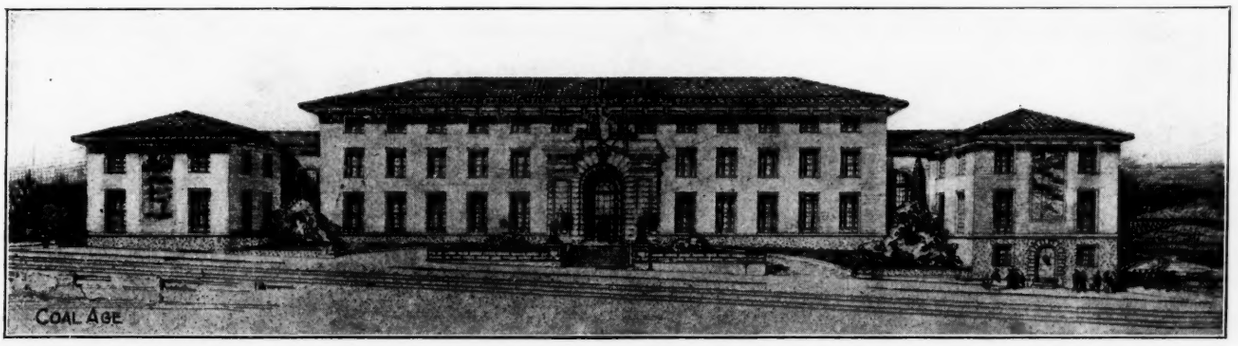
The group consists of three main buildings. The central building of the group, the mining building, will be three stories in height, flanked by two other buildings, one the mechanical, and the other the chemical building. In the rear of these, and inclosing a court, will be the service building. Beyond the service building, and spanning what is known as Panther Hollow, thereby connecting the Bureau of Mines buildings with the Carnegie schools, will be two buildings, over the roofs of which will pass the roadway from Forbes St. to the Carnegie schools and Schenley Park.

Between the main group and the power and fuel group, will be the entrance to a series of mine shafts. One of these will be used as an elevator to carry heavy material and passengers from the lower level to the upper; another will be for tests of hoisting ropes and similar mining appliances; another will be an entrance to tunnels extending under the buildings and in which mining experiments, such as fighting mine fires, will be conducted.

The portion of Panther Hollow above the power buildings will be arranged as a miners' field, the slopes of the ravine being utilized as an amphitheater, which will accommodate 20,000 spectators, who may assemble there to witness demonstrations in mine rescue and first-aid.

The main, or mining, building will contain the administrative offices, and those of the mining force. In it will be an assembly and lecture hall, a library, smoking room and other rooms for demonstrations and training in mine rescue and first-aid. The mechanical building will be for experiments and tests of mining machinery and appliances; and the chemical building for investigation and analyses of fuels, explosives and mineral substances.

The buildings now used by the Bureau of Mines as an experiment station, at Pittsburgh, were loaned by the War Department, as an emergency measure, when the Bureau was created. The War Department has suggested that it now needs its own buildings and it is felt the Bureau cannot retain possession much longer. The buildings are very old and are entirely unsuited to the needs of the work. It is said that the investigations have been seriously handicapped by the inadequacy of the structures now in use.




PROPOSED NEW BUILDINGS OF U. S. BUREAU OF MINES

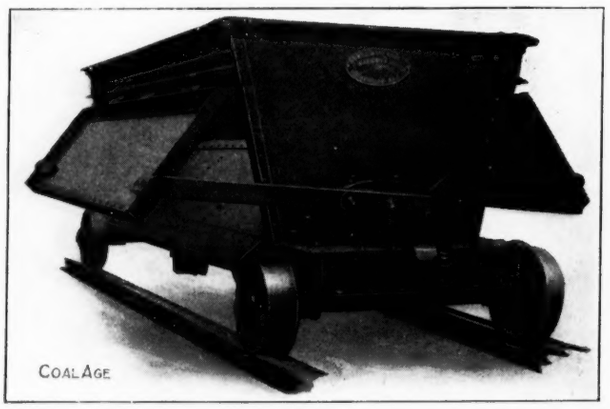
## Illinois Miners and Mechanics Institute

Recognizing the importance of the coal industry in Illinois, the legislature of that state has authorized the establishment of an institute designed "to prevent accidents in mines and other industrial plants, and to conserve the resources of the state." The administration of the institute is vested in the trustees of the State University. The trustees have appointed a director and have placed the institute under the general supervision of the Department of Mining Engineering of the University of Illinois. The chief purpose of this institute is to serve the employees of coal companies who wish to attend a short course on coal mining. The institute will, therefore, offer such a course beginning Apr. 6, and continuing until May 16, 1914. There is also a two-year course of systematic instruction, which is so arranged that a man will be able to continue full time at his work while engaged in acquiring technical knowledge. Bulletins can be obtained by addressing R. Y. Williams, Director, Illinois Miners and Mechanics Institute, Urbana, Ill.

## A New Type of Automatic Dump Car

The Montgomery Coal Washing & Mfg. Co., of Birmingham, Ala., have placed on the market an automatic dump car, which seems to be an improvement on many types now in use.

The Montgomery company originally designed this car for removing the refuse matter produced in the operation of their coal-washing plants, but it has gradually found its way into use in many places where a monitor car is necessary, such as handling coal, stone, or ore down an incline, removing mine refuse, stocking coal, coke, etc., and removing boiler refuse.




NEW STYLE DUMP CAR FOR COAL MINES

While commonly employed on an incline where it returns by gravity, this car may be used equally well in connection with a tail rope or may be provided with a motor for self propulsion.

The car is provided with a friction wheel beneath the body which comes in contact with an ordinary 2-in. plank, spiked to the ties, thereby automatically opening and closing the doors; the doors being opened on its passage over the plank and closed and locked on its return.

By changing the position of the friction wheel and providing additional planks, two or more cars may be operated on same track and dumped at different places.

## The Situation in Labor Circles

The current week has witnessed the adjournment of the Chicago conference, which involves the western Pennsylvania, Ohio, Indiana and Illinois districts, and the reconvening of the central Pennsylvania conference at Philadelphia.

The disagreement in the Western situation was the result of a deadlock regarding the elimination of Clause Three of the Cleveland agreement. The miners proposed that this agreement be used in its entirety, with the exception of this Clause Three, which they desire omitted. The operators would not accept this condition. This clause provides that no change in the agreement reached at the joint conference, which will in any way affect the cost of production shall be made by district organizations. The removal of this condition from the agreement would make it possible for local unions to demand an increase in wages at any time they desired.

District President Patrick Gilday, of District No. 2, United Mine Workers of America, with nine delegates, represents the union contingent at the new Philadelphia conference. They are still demanding a 10 per cent. increase for all day labor, the check-off, the mine-run basis, and that the operators pay the expense of pushing the mine cars. Up to the present writing, the deadlock has been as complete as at the two previous conferences, and there are no present indications that an agreement will be reached.

## A Big Consolidation of By-product Companies

Otto Coking Co., Inc., has been formed to operate in the United States, and, on Mar. 1, 1914, took over the organization, assets and good will of the Schniewind Coke Oven Co., the United Coke and Gas Co., the German American Coke Co. and the American Coke and Gas Construction Company.

The Otto Coking Co. is controlled by the interests in Dr. C. Otto & Co., of Dahlhausen a. d. Ruhr, Germany, and the Otto Byproduct Coke Co., of Leeds, England. The object is to introduce into the United States the Otto Regenerative Oven, with direct recovery of ammonia, tar and benzol.

The new company starts out with a contract for the immediate erection of a plant for the Buffalo Byproduct Coke Corporation, at Lackawanna, N. Y., near Buffalo, with several other negotiations now going on for additional plants.

The permanent officers of the new corporation will be Dr. M. G. Christie, Leeds, England, President, who will spend about half his time in this country; Dr. C. Otto, Assistant to the President, who will shortly take up his permanent residence in this country—Dr. Otto being the son of the inventor of the original Otto oven. The Vice-President and General Manager will be Mr. Louis Wilputte, one of the best known coke-oven engineers in America. The Secretary and Treasurer will be George F. McKay. The temporary offices of the corporation will be at No. 6 Church St., New York City, where they occupy the entire seventh floor.

## Itinerary of Federal Rescue Car

EVANSVILLE CAR No. 3

| Arrive | Leave | Address |
|---|---|---|
| 1914 | | |
| March 23 | March 28 | Boone, Iowa |
| March 30 | April 4 | Colfax, Iowa |
| April 6 | April 11 | Melcher, Iowa |
| April 13 | April 18 | Knoxville, Iowa |
| April 20 | April 25 | Ottumwa, Iowa |
| April 27 | May 2 | Albia, Iowa |
| May 4 | May 9 | Chariton, Iowa |
| May 11 | May 16 | Dallas Center, Iowa |
| May 18 | May 23 | Mystic, Iowa |
| May 25 | May 30 | Rathburn, Iowa |

## Erratum

In our issue of Mar. 14, p. 437, referring to the capacity of air to absorb moisture, the following statement is made: "It practically doubles with every 250 deg. F." This should be: "with every 20 deg. F."

## COLLIERY NOTES

In Illinois, there are 79,411 men working in and about the coal mines. Only two other states have a larger production of coal, and in no other state is there as much unmined bituminous coal as there is in Illinois.

A good light at the pit bottom and along main haulage roads is very necessary. Where the lighting is done from power circuits, bulkhead and well-glass fittings, hermetically sealed and protected by wire guards, and connected five in series on 500 volts, make a satisfactory arrangement

European experience in colliery operations is tending to prove that it is advisable to have two winding drums instead of one to each shaft; when this plan is followed, the two cages in the shaft can be raised and lowered independently of one another. German experience along this line has shown conclusively that in working thick seams of coal, a much larger output can be obtained by the employment of two drums.

# Editorials

## Miners' Union Opposes National Guard

The Illinois division of the United Mine Workers of America assembled in convention at Peoria on Feb. 27, and by a vote almost unanimous adopted a resolution condemning the National Guard as maintained in the various states, and urging all labor unions to do everything in their power to discourage their members from allying themselves in any way with the state soldiery.

It was pointed out in justification of this resolution that in all industrial struggles the National Guard had opposed and often frustrated the designs and practices of union labor.

So far as we are aware, the National Guard of Illinois has never been called into service, except for the protection of life or property. No law-abiding citizen, or group of citizens, has aught to fear from this most powerful and efficacious weapon of the commonwealth—the last resort of the chief executive. This antipathy to our military organizations now displayed by the United Mine Workers causes us to doubt the sincerity of their desire to act within the bounds of the law.

⁂

## Religion and Coal Mining

We readily grant that in admitting the Sunday schools of Palos, Ala., to our columns, we depart somewhat from the rules which regulate the technical press and we do not expect to do this frequently.

It is needless to say that the difficulties in many towns arise largely from a disregard of that essential element in human progress—religion. If the reader doubts the importance of this factor, we would refer him to Benjamin Kidd's "Social Evolution," to prove the effect of the religio-ethical element in the progress of civilization.

As he points out, the resistance of the classes which possessed formerly the sole right to vote, to an education and to political preferment, have been broken down by the surrender of the more liberal members of that class to the nonrational or religious arguments presented. The poorer people have always been largely and most successfully led in their opposition to the richer not so much by the members of their own class as by the more ethical elements in the very class whose privileges were thus threatened. It is true today that the more arrant forms of capitalism are most menaced by protagonists found among the capitalists.

The appeal is always to rights and not to force and the world moves steadily along. If the nonrational appeal is of no value, why do the labor unions so continually use it? They rarely say we can do thus and thus, but rather that public opinion demands this or that. Each side from the beginning appeals to public opinion, a motive power not rational, but moral.

But what is the virtue of the church and religious school? Men meet in political assemblies to reform *others* by force of law; they assemble in labor unions to restrain and compel capitalism by strikes, sabotage, demonstrations and blacklists. The operators meet and weary each other with condemnations of the workmen. These assemblages are all conventions of protest. They aim to regenerate the other fellow.

Your religious meeting is different. It is almost always for self-regenerative purposes and consequently marks real progress. We can conceive that as a result of increasing religious opportunities, our sociological campaign will move more rapidly, but certainly with less friction and clamor. When both parties, employer and employed, have their minds centered on their own particular shortcomings, those evils which threaten to convulse the state will have no place to hide.

Therefore, we hope that churches and Sunday schools will grow and flourish in our mining towns and incidentally smooth the paths of industry and advance the coming age of mutual help.

⁂

## Playing to the Grandstand

The juggling of words, the distortion of fact, the placing of a subject in false perspective in order to win the plaudits of the multitude, are rhetorical tricks perhaps as ancient as the transmission of ideas by articulate utterance. The demagogue and agitator stoop to any means however perverting in order to "be in with the crowd." So long as such people can "play to the grandstand," they stop at nothing.

A Pittsburgh newspaper, under date of Feb. 13, prints the following editorial:

Just as soon as these mining troubles are looked at by other than local eyes, carefully adjusted to viewing conditions through them and no others, a new picture is given to the public. It was so in West Virginia, it is so in Michigan, and it will be shown to be so in Colorado when the Federal investigators have completed their work.

The Federal commission on industrial affairs has just reported that the troubles in the copper-mining regions of Michigan are due solely to the mine owners. That is what the senatorial committee reported in the case of the West Virginia coal miners. It is what the congressional committee now at work in Colorado will report.

The Federal commission in its report gives the Western Federation of Miners an excellent bill of health. The report confirms what was said by the striking miners in Michigan—that the trouble was because the mine owners refused to treat with the miners' organization, or recognize any of its officers. Therefore, the long battle, and bloodshed, and wanton slaughter of 72 women and children at Calumet, was only for the legal rights that every man has.

Of course, bound up in that is the right to defend themselves economically, but that is exactly what the mine owners have done. The main difference is that the miners organize to defend their lives, while the mine owners are compactly bound to exploit miners and public. But the question of right to organize is the one issue in the copper strike.

That is what was found in West Virginia, and what will be reported by the congressional committee in Colorado. The miners simply want to exercise their right to defend themselves. If the Western Federation of Miners, or the United Mine Workers is unlawful, or unlawfully conducted, that is a matter for the legal authorities to deal with, not the mine owners' organization. Organizing for self-protection is not a crime, and the mine owners cannot make it one.

But—it is a crime to shoot and deport, and "bull pen" men, women and children, to trample them to death in a panic in a crowded hall, and starve them for trying to defend themselves. There is the crime.

We call particular attention to the statement in the third paragraph: "The trouble was because the mine owners refused to treat with the miners' organization or recognize any of its officers. Therefore, the long battle and bloodshed and wanton slaughter of 72 women and children at Calumet was only for the legal rights that every man has."

*O tempora! O mores!* Is it the inherent right of citizenship, is it the privilege or duty of the wage-earner to make of himself a veritable "dog in the manger?" to say to his fellow workmen and the world at large, "I will not work except under such and such conditions and you shall not accept that which I refuse?" Is there any law, statute or custom which requires any employer to treat with—much less recognize as "it"—any "officer" or organization of or among his employees?

"The miners organize to defend their lives"—human life cannot be jeopardized unless there be a source of danger. We note that the periodical quoted is silent as to the nature of this peril to the workingman's existence. Was it the musket or the lash, or was it a purely fanciful grievance, the offspring of some organizer's lurid imagination?

No sane, logical, thinking individual will question the right of any class of men to band themselves together for mutual enjoyment or advantage. When, however, the activities of such an organization run counter to the laws of our nation, when its members—whether right or wrong in their contention—resort to riot and intimidation, they must not blame the mine owner if the consequences of their indiscretion are both copious and bitter.

It is just as foolish and narrow to believe that the mine operators are always right in their contentions as as it is to believe that every miner is a saint with a through ticket for heaven. There isn't any higher percentage of virtue among coal men, high and low, than there is among the people engaged in other industries. Every move on the part of each class—employer and employee—must be considered fairly and without bias, if commerce and industry in America are to be advanced on lines of justice and truth. The greatest harm is sure to come from always approving or condemning without question the action of either party in a labor conflict.

At the present time unionism has become so widespread that regardless of fact, regardless of all principles of recitude or equity, regardless of property right, regardless of the time-honored laws of *meum* and *tuum*, the crowd must be catered to. Our Pittsburgh contemporary has "played to the grandstand."

## The Union

In most of the coal states the "Miners' Union" has come to stay. The operator does not face the question whether he wants unionized or ununionized conditions, but what sort of men are going to lead the organization and what demands these men are going to make. Nor let anyone doubt that the men of the Union are going to make demands and not assent readily to the operator's wishes in mine regulation.

These are facts and to them the operator should not oppose mere bluster. Unkindly remarks about the Union only make the hard-working intelligent miner realize that the operator dislikes the Union from its president to the more humble pit committeeman. The more intelligent miner, therefore, is not disposed to incur the ill-will of his employer, and as a consequence, he keeps out of union activity, permitting the radical irreconcilables to entirely rule all labor councils.

We confess that a better spirit on the part of the operator might induce many men of fair mind and honest purpose to seek for union preferment. We do not suggest that the operator, quietly or otherwise, urge men of extremely conservative mold to run for office. Such men are too reactionary to lead. But men who know what is right, and who will stubbornly resist an unjust course on the part of either operator or miner, should be encouraged to seek the best places in the Union.

It is time for the public good that we should have men in the operating positions and in the Union, who will make development in mining more rapid by making it more profitable to both owner and miner. If the differentials be small, or if they be refused when machines of larger capacity are introduced, when coal conveyors are installed, when longwall systems are put in force and other changes are made, no progress will be possible.

If merchants and manufacturers acted like many union officials now act, we should still live as our fathers did. Advantages must be split between the buyer and seller, otherwise the buyer will not purchase or the seller deliver.

An opportunity for real statesmanship exists in the Union—a measure of good judgment, which will make money and easier conditions for both parties. Greediness, such as usually distinguishes the mine owners and the Unions alike, after a bitter struggle, never makes for efficiency. A new union, unlike a new broom, does not sweep clean. The "foxiness" exhibited on both sides generates suspicion, and improvements in mining methods are impossible, while men of real ability and sterling character are by reason of the many disagreements prevented from engaging themselves steadily in the executive service of either operator or miner.

## The Chief Cause of Mine Accidents

In a letter to Doctor Holmes, President Moorshead, of the Illinois Coal Operators' Association, says:

I think you will agree with me that it is not so much for the want of laws that we suffer, as it is for want of respect for them. I do not mean that we should not have better appliances and more modern equipment generally, but I do contend that back of all our more serious accidents is the disrespect for law and authority.

We cannot hope for a better state of affairs until convictions in the courts for violation of the laws are more general, and this will not be until greater powers are given to inspectors and superintendents so that they may be able to arrest men who openly violate instructions.

Mr. Moorshead has here put his finger on the sore spot of the coal industry. Lack of discipline will destroy the most magnificent organization, and there cannot be discipline where there is not both fear and respect for the law. Let everyone insist on the enforcement of all our present mining regulations. The result will be that ill-advised legislation will be corrected, and in the end fewer fatalities will be recorded. There is no more certain way to cause the repeal or amendment of an unfair and unjust law than to insist on its strict observance.

# Sociological Department

## Method of Rendering First-Aid

By A. S. Snyder*

*SYNOPSIS—A discussion of the most effective methods of rendering first-aid-to-the-injured in the more frequent types of mine accidents—as the breaking of a limb or the back—and practical suggestions regarding the best procedure in event of such accidents.*

The first thing to learn in first-aid methods is to tie the reef, or square, knot. It is well to learn to tie a reef knot and thereafterward use that method for tieing all knots in whatever you do. They are as easily tied as the granny knot, look better, are more secure and more easily opened.

Neatness is another factor in first-aid practice which requires considerable attention. Even the most simple bandage for an injury of the finger should be applied with neatness, as it will impress the injured with confidence in the person attending the injury. Furthermore, if bandages are applied neatly, they naturally fit the parts to which they are applied better than if put on in a slouchy manner, and the result is that this precaution adds to the comfort of the injured person.

In rendering first-aid-to-the-injured, always keep this thought well impressed on your mind, "Whatever you do is to make the injured person as comfortable as possible and to prevent the injury from becoming more serious, until medical aid can be secured."

### Fractured Limbs

Before moving an injured person, be sure to treat the injury in such a manner as to prevent further injury.

In fractures of bones of the limbs, secure them with well padded splints, being careful not to have undue pressure at the point of fracture, as that would cause unnecessary pain. Pad on each side of fracture, and place one bandage on each side of fracture around splints.

In fractures of the lower leg, have the splints long enough to reach above the knee and secure them there with a bandage, to prevent any movement at the knee.

In fractures of the thigh, the outside splint should be long enough to reach from the armpit to the foot, and the inside splint, from the crotch to the foot. Place one bandage around the splints on each side of the fracture, one below the knee, one around the hip and outside the splint, and one around chest. Use one bandage to tie the feet together and one around both legs at the knees. In all, seven bandages are required.

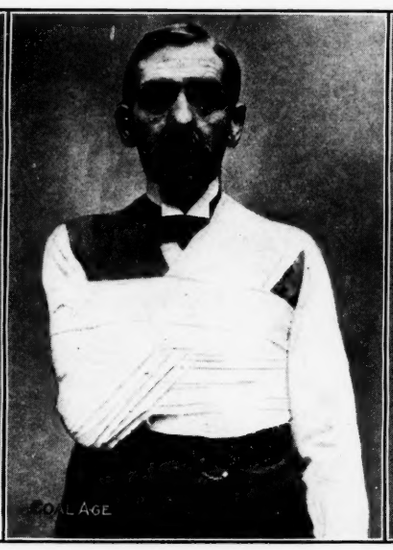
In fractures of the middle, or upper third, of the upper arm, always apply the splints so as *not* to interfere with the elbow—one splint to the inner and the other to the outer side of arm, permitting them to extend down to the end of the elbow. If of the lower third of upper arm, it is best to use a triangular splint and secure the upper part of the upper arm rigid with the forearm.

In fracture of the forearm, have the splints reach from the end of the elbow to the tips of the fingers, and apply one bandage above the fracture and one below, starting the lower bandage in palm of hand, making a figure of 8 on back of hand and securing the ends above wrist.

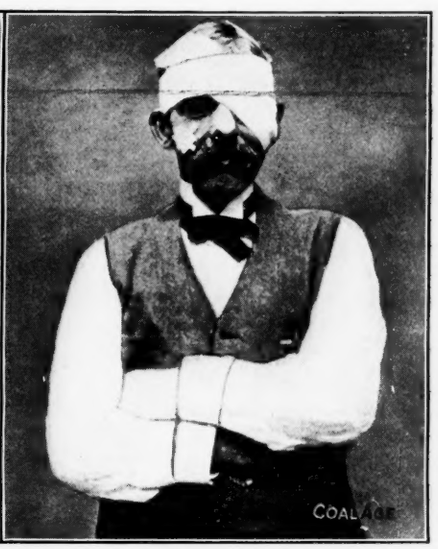
When applying splints or bandages to any part of the hand or arm it is best to hold the arm in the position in which it is to be carried—it being understood that the arm should always be placed in a sling.

For fracture of the wrist or bones of the hand, secure with splint in palm of hand, letting it extend back some

Showing Proper Bandage for Injury to Hand



Bandage for Fracture of Right Collar Bone



Method of Treating an Injury to the Left Eye

*Berwind-White Coal Mining Co., Windber, Penn.

distance along the arm, so as to keep the hand rigid.

For fracture of the bones of the fingers, apply a small splint on the inside of the injured finger, or a piece of cardboard on each side.

### Broken Back

A broken back is one of the most serious injuries with which a first-aid man comes in contact. The condition of the injured person is not always the same; their position after the accident is not the same; the degree of the injury is not the same. But in all cases the injured persons have to be handled with great care so as not to cause any further injury to the spinal cord. It is first necessary to place the injured persons on their back, after which the following described method of treatment has been approved by first-aid men and physicians everywhere.

Use two boards, 5 or 6 in. wide, placing them under the injured person, one on each side, being careful to pad the boards well beforehand. The best method of placing these boards under the patient, in order to prevent unnecessary movement, is for three persons to raise one side of the body high enough to slide one board under that side, parallel to the spine and about 1½ in. from center of spine; then raise the other side in the same manner and slide the other board under that side. The boards should be placed in such a position that they are about 3 in. apart, one on each side of the spine. The boards should be a little longer than the patient, if the ambulance or conveyance will permit. Cross pieces should then be placed under the two boards and securely tied to them at each end. The cross pieces should extend out far enough to serve as hand-holds in carrying the patient.

The injured person should then be securely tied to the splints by placing bandages around both the body and the splints; one about the chest and one around the hips. Each leg should also be tied to the splint on which it is lying. Special care is required to pad the boards or splints properly beforehand, so as to make the injured person as comfortable as possible.

I have seen a number of methods demonstrated and have heard descriptions of others I have not seen, but the above method seems to be the most satisfactory in every way. In case of a broken back it is required that persons treating the injury must use such judgment as is always required in emergency cases. When possible the treatment and moving of the injured person should be under the personal direction of a physician, and a physician should always be sent for at once.

### Compound Fractures

The first thing to note in cases of compound fractures, as in other wounds, is, whether the hemorrhage is severe or moderate. If severe, it must be checked at once. Great care must be exercised to prevent infection. Clothing must be removed and a surgically clean dressing or gauze applied to the wound. This dressing must thoroughly cover the wound. If the end of the bones protrude through the skin, no attempt to replace them should be made, but the dressing and splints and bandage applied just as they are. The rest should be left for the physician, who should be notified immediately.

The clothing should always be removed from an injury in examining it, as no injury can be intelligently treated until its nature is known. In removing the clothing, it is best to cut it along a seam.

### Varieties of Wounds

Any injury in which the skin is pierced or broken is called a wound. There are four general varieties of wounds, as follows:

1. An incised, or cut, wound, is a clean cut made by some sharp instrument, such as a knife, razor or piece of glass.
2. A lacerated, or torn, wound, is where the tissues are torn rather than cleanly divided, as in the case of an incised wound.
3. A punctured wound is generally small but deep, and may be caused by such instruments as a needle, nail, stiletto or pick. Bullet wounds are also classed as punctured wounds.
4. A contused wound is a bruise generally caused by a fall or by a blow from some blunt instrument.

## A Sunday School at Palos, Ala.

When the Palos Union Sunday school was organized, August, 1912, its leaders realized that to make it a success, it must be an interdenominational body, as there were not enough members of any one creed for separate schools. When it was first organized, there were about 25 pupils present, but from the first the school has continued to grow, until now the enrollment reaches 200, with an average attendance of 100 pupils.

A special effort has been made to increase the adult Bible class, since September, 1913, and this endeavor has been most successful. There are on the roll 80 members, with an average attendance of 45, the largest number

The Palos Sunday School with the Superintendent in the Center of Foreground

present at any one time was 64, only 4 of whom were visitors, the rest being regular scholars.

The class name is Good Fellowship, and the emblem is the regular button with white center, around which is a red border; the class has membership, social and devotional committees. The membership committee look after new members and the absent ones, when they stay away more than two Sundays in succession; the aim being to help those that are in need of help—morally, spiritually or otherwise.

W. W. Kicker, mine superintendent, is in charge of the Sunday school. The method of organization of the adult Bible class and the name by which it is known do away with the idea that is a one-man class. Everyone feels that the class is his and not the teacher's private

THE GOOD-FELLOWSHIP CLASS AT PALOS
(Superintendent on left of second row from front.)

institution, in which he is introduced merely as a listener. The school is composed largely of miners and their families, but a number of farmers and business men in other walks of life are members.

It is an inspiration to any one to visit the school, and see the large number of men, women and young people in attendance. The school contains 106 members, and the Good Fellowship class has 46, as will be seen in the photographs.

Our little town of Palos is a well conducted village. The company which is the Republic Iron & Steel Co., does not permit the sale of whiskey and will not retain a man who gets drunk in its employ, nor will it permit drunkenness in any of its houses. Last Christmas not a drunken man was to be seen anywhere on the premises. The company employs about 200 men and they are of the best class.

## Loyalty to Contract Obligations

BY GEORGE N. LANTZ*

Patrick Gilday, president of District No. 12, United Mine Workers of America, is to be complimented on his boldness in advocating a penalty for breach of contract between miners and operators.

It requires a certain amount of courage to suggest the imposing of a fine for the misconduct of those who elect one to office. Especially is this true in the case to which I refer, inasmuch as the miners' union has always been known to be opposed to such a course. However, the action of President Gilday, in this matter, serves to emphasize the need of something of the kind. While not being troubled with the "button strikes" that have so frequently occurred in Pennsylvania, the miners in Ohio often go on strikes to settle matters that might easily be adjusted otherwise by the exercise of a little patience and good judgment.

The agreement between operators and miners provides that workmen shall not stop the mines, except for the breaking down of the scales or the refusal by the company to pay the miners on pay day. It is mutually agreed that either of these causes furnishes a sufficient excuse for the miners not going to work. A strike occurring from any other cause, whether otherwise justifiable or not, is clearly a breach of contract on the part of the miners. The fault may or may not rest wholly upon the miners, but may be the natural result of some injustice or unexplained action on the part of the operators. The terms of the contract, however, give no choice or option in the matter. The miners must continue to work if they would be *loyal to their contract. That the abrogation of a contract by one party thereto is a crime that should not be lightly regarded, all must allow.*

The inauguration of a system of fines for breach of contract would generally require the appointment or election of a board to interpret the meaning of the contract in different cases. If that board is well chosen and its duties clearly defined and it is understood and agreed that their findings shall be final, it will do much to eliminate friction between the parties to the controversy. The same board or a similar one might, also, decide a number of other matters that are local and cannot be specified in an agreement affecting whole states or districts. Among these may be mentioned: The eligibility of bosses for membership in the union; payment for "dead work"; removal of impurities from coal loaded in the mines; overtime and Sunday labor; payment for fractions of hours, and a number of other like matters that are often in dispute. The work of such a board, if properly systematized, might render disputes less frequent, as many questions would be governed by precedents previously established. The tendency would be greater coöperation between employees and employers, which is greatly needed.

*New Straitsville, Ohio.

## Recent Legal Decisions

**Injury Caused by Breaking Cable**—A coal miner, who was injured through breaking of a cable used in drawing cars up an incline, was not necessarily guilty of contributory negligence in attempting to cross the track before the cars had passed. (Texas Court of Civil Appeals, Burnett Fuel Co. vs. Ellis, 162 Southwestern Reporter 911.)

**Warning Miners against Existing Dangers**—A mining company was not relieved from liability for injury to a miner, caused by the falling of part of a mine roof, because he was warned of the danger, if it was not his duty to prop the roof. (Kentucky Court of Appeals, W. G. Duncan Coal Co. vs. Thompson's Administrator, 162 Southwestern Reporter 1131.)

**Injury Caused in Blasting—Scope of Miner's Employment**—A coal-mining company cannot escape liability for injury to a miner, caused by fall of part of a mine roof due to shooting of nearby coal pillars, by showing that he was given no assurance that no shots would be fired. But that is a circumstance bearing on the question whether or not he assumed the risk of the accident. A miner engaged in replacing a canvas curtain which was used to divert fresh air into his working place, and which had fallen, was not acting outside the scope of his employment, as affecting his employer's liability for injury received while he was so engaged. (United States Circuit Court of Appeals, Eighth Circuit; Victor-American Fuel Co. vs. Peccarish; 209 Federal Reporter 568.)

# Discussion By Readers

## Widths of Opening and Pillar

*Letter No. 1*—Referring to the inquiry of Thomas C. Miller, COAL AGE, Feb. 28, p. 379, I desire to submit the following for consideration, believing that the further discussion of this question may be of special interest, not only to Mr. Miller, but to COAL AGE readers in general.

The answer given to this question in COAL AGE, at the time of its publication, is correct, as far as it goes; but in my opinion, certain important considerations have been overlooked. 1. The action of the dynamic forces that are set up when the sandstone and other overlying strata break to the surface as a result of robbing is not considered. 2. The extra loading due to the cantilever action of the roof on the pillars is overlooked.

The pillars must always be large enough, not only to support the superincumbent strata, but to provide against the conditions just mentioned. For economical mining, experience dictates that frequent resort must be made to "slabbing" or splitting of the pillars, in "robbing." This practice avoids the expense of cleaning up heavy falls of roof at that time.

Mr. Miller expresses the opinion that no falls of a serious nature will occur; but, at Rhodda, on Preacher Creek, and in other mines of the Stonega Coal & Coke Co. reported to be working the same seam of coal in the same locality, frequent areas of bad roof have been encountered; and it seems probable that the same conditions may later be found to exist at Benham, in which case it may be expected that the pillar work will be congested by falls of slate.

In the practice of robbing pillars, there is always a portion of the pillars that must be extracted before the roof breaks through to the surface. At times, this area of unsupported roof will cover an acre, and of necessity an excessive load is thrown on the pillars along the robbing line. The additional width of pillar required, under these conditions, is determined by assuming that the overhanging roof forms a uniformly loaded cantilever, extending from the robbing line to the last break in the gob. As the pillars are drawn back, the length of this cantilever increases until another break occurs over the pillar. A severe dynamic load is thus thrown on the pillars at intervals. Experience seems to dictate that the dynamic forces thus set up and the cantilever load acting on the pillars are as great as the dead load due to the superincumbent strata. If this be true, instead of 20-ft. rooms on 40-ft. centers, there should be driven 20-ft. rooms on 60-ft. centers.

Assuming, however, as Mr. Miller states, the pillars in the lower seam will stand for years, provision should be made for splitting the pillars, in robbing. These splits are seldom driven less than 16 ft. wide, and the original pillar should be, therefore, increased at least this width, making it necessary to drive 20-ft. rooms on 80-ft. centers. The dimensions given above are in common use in the Pocahontas field.

Again, it must be remembered that if the pillars are not mined clean, eccentric loading will occur, regardless of dimensions, in which case a squeeze is almost the inevitable result. For this reason, all mining should be conducted on the panel system, or some modification of the same that will provide large barrier pillars, at frequent intervals in the mine, and prevent the spread of a destructive squeeze throughout the entire workings. With proper supervision, over 95 per cent. of the coal in seams may be extracted at a reasonable mining cost.

As was stated in COAL AGE, in answer to this inquiry, "There are many factors that influence and modify the width of pillars and openings; and, while much value attaches to a theoretical analysis of the question, careful consideration must be had for such features as tend to lessen the strength of the pillars by softening the coal or the underlying stratum, or by producing a grinding action that would crush and weaken the pillars. The existence of gas in the coal or the strata adjacent thereto, or the presence of water, will tend to weaken the pillars and must be considered in studying this problem, as also any considerable inclination of the seam."

It should be the aim of every coal operator to conduct his operations in such a manner, that not only he, but the miner also, may reap the maximum return, for the minimum of energy expended. A recent study of room widths, for the purpose of trying to determine the most economical width of opening to adopt, would indicate that a 20-ft. room in a seam 5 ft. 6 in. thick, under conditions existing at Benham, is wasteful of the miner's energy and requires more than the minimum amount of explosive per ton of coal produced.

## Indications of Gas on the Carbide Lamp

Some time since, mention was made in COAL AGE, Vol. 4, p. 27, of the behavior of the flame of an acetylene lamp in the presence of carbon dioxide. Warning has frequently been given of the increased danger to miners using carbide lamps, by reason of a greater depletion of the oxygen of the air being necessary to extinguish this lamp. The argument is advanced that the carbide lamp continues to burn in at atmosphere in which other lamps are extinguished.

In investigating this question for myself, I made careful observations in an abandoned entry from which the ventilating current had been excluded. My experiments led to the discovery of a phenomenon that I have never heard described or mentioned, and it occurs to me that the results might be of interest to the readers of COAL AGE. I believe it is the duty of any man who stumbles blindly onto facts that may be of value to his fellow workers or add to their common safety, to make these known and, with this purpose in view, I submit the following:

It may not be generally known that a much smaller percentage of marsh gas ($CH_4$) can be detected with an

ordinary carbide miner's lamp than by many of the safety lamps used for that purpose. I would first suggest that, in testing for gas with a carbide lamp, it is necessary to hold the lamp in such a position that the reflector will shield the eyes from the glare of the flame and care should also be taken to avoid the reflection of light from any surfaces in front of the lamp, as such reflection blinds the eyes so that the flame cap cannot be seen on the lamp. The best results are obtained with a large flame. In the presence of gas a luminous tail or cap extends outward and upward from the flame; which, in pure air, has a reddish tinge. I have found that a very small percentage of marsh gas, less than can be detected by the best safety lamp in use, causes this tail to elongate and take on a bluish tinge. When sufficient gas is present to give a cap varying from ¼ to ½ in. on the safety lamp, the cap on the carbide lamp will appear alarmingly large and wicked.

Having observed this fact by accident, I adjusted a carbide burner within the combustion chamber of a safety lamp, at the same time providing a shield to protect the eyes and permit the better observation of the cap. I found, however, that whether using a Davy lamp or one of the Clanny type, the reflection from the gauze or glass so blinded the eye that the cap could not be satisfactorily observed, and I concluded to abandon that attempt. Of course, the open carbide lamp cannot be used for ordinary testing purposes. But, when a test with a safety lamp fails to indicate the presence of gas, some surprising results may be observed on the open carbide flame, the tail of which is greatly elongated as the percentage of gas increases.

Interesting results were obtained in experiments with the carbide lamp in blackdamp. Entering a stagnant mixture, it was observed that there was enough marsh gas present in the upper stratum of air close to the roof to produce a faint cap ¾ of an inch long on a Wolf lamp. On lowering the lamp to within about 18 in. from the floor, the flame dwindled and it was necessary to raise the wick to avoid the extinction of the lamp. The lamp was then set on the floor and the flame was extinguished by the gas, which fact I consider indicated the presence of carbon dioxide and not simply an atmosphere deficient in oxygen.

The carbide lamp was now brought into use and developed a long cap that was much easier to observe than the ¾-in. cap on the Wolf lamp. On lowering the carbide lamp into the blackdamp at the floor, the flame was contracted and took on a reddish tinge. Its extreme brightness vanished and, instead of extending almost horizontally from the burner tip, as ordinarily, the end of the flame turned upward. Placed on the floor, where the safety lamp was extinguished, the flame of the carbide lamp continued to burn, though with less volume and brightness; and the outer third of its length was turned upward almost vertically. The carbide lamp was now advanced into a stronger mixture of blackdamp where it was necessary to increase the supply of water to maintain the flame. In this position, however, the flame went out suddenly, instead of gradually growing less and being finally extinguished, as is the case with an oil lamp.

In reporting these observations that seem to be of value, I would suggest that, although an experienced observer will learn to detect readily a lower percentage of blackdamp on a carbide flame than what would be fatal to life except by long exposure to its influence, the wisest plan is to use an oil lamp where blackdamp is suspected, because of the greater sensitiveness of the oil flame to extinction in this gas. I have offered the information, believing it to be valuable to a person who ordinarily uses a carbide lamp and who may unexpectedly encounter blackdamp, which would escape his notice but for this knowledge.

WILLIAM KELLUM, Supt.,
Southern Coal & Coke Co.
Glen Carbon, Ala.

## Coal Mining in England, Past and Present

I have been greatly interested in the recent references, in COAL AGE, to the efforts now being made to increase the safety in mines by suitable and much needed mine legislation and the certification of mine officials. It brings to mind some observations that I made on a three months' vacation trip in old England last summer, after an absence of ten years in this country.

Mining conditions there have greatly changed. Doncaster, in South Yorkshire, ten years ago was a sleepy farming town of little importance, except for its far-famed butterscotch and the annual horse-racing events. Today, it is a busy thriving mining center and contains some of the best equipped mines in England. Among these may be mentioned the Dinnington Main Colliery, the first English mine to be equipped with a wireless system of signaling underground—a German invention installed by a German firm. Here, also, is the Bullcroft Colliery, another finely equipped mine, the headgear being supported above the shaft on massive concrete arches. This mine is equipped with 3000 Ceag electric lamps. No open lights are allowed in the mine, which is the case, also, in a number of other mines in this locality. By the use of the electric lamp, the operators hope to reduce the prevalence of the miners' nystagmus, with which a large number of miners are afflicted in safety-lamp mines. Under the English law, miners suffering from this disease receive a certain compensation during incapacity, as provided by the Employers' Liability Bill.

At the Micklefield Colliery, in Yorkshire, a great transformation has taken place. New shafts have been sunk and new seams developed. But the most striking feature of all is the clean appearance of the surface plant, these mines being operated solely by electricity. No boilers, smoke, or escaping steam are in evidence. The buildings are of artistic design and the grounds surrounding them are laid out with shrubs and flowers. The coal, as hoisted, is transported to a distant point, where it is loaded on the railway cars. The entire plant is one of the most modern in England. The electric hoists employed are considered far superior to the old steam hoists.

The credit for these changes is to be attributed largely to the new Mines Act and the new mining rules and regulations put in force at the mines. The "Safety First" idea has been made a fundamental feature of the new law, which fact has greatly reduced accidents at mines where these laws are strictly obeyed.

Aside from these improvements and in strong contrast thereto, I regret to say the actual mining conditions underground have made little, if any, advance. My observations lead me to attribute this fact to the supplant-

ing of the practical mine managers of 15 years ago, with young men—a class known in England as the "Articled Pupil." These young men are generally the sons of the middle classes. By the payment of a certain sum, they are permitted to take a five years' course of study and apprenticeship, under the direction of the company's officials. They learn a little about surveying and accompany the officials in their daily rounds of inspection, asking questions and picking up such information as they are able to understand. At the end of the allotted time, they are given an examination which is more technical than practical. Having passed this examination, they remain with the company until a vacancy occurs.

Under this prevailing condition, I am sorry to say that the man who has worked hard in various capacities in the mine and, by constant effort and study, has fitted himself both practically and theoretically for the work, has scarcely any chance at all. He is only permitted to act as an instructor, to educate the "articled pupil" in practical mine work and help him out when later he becomes manager. As a consequence, it is not surprising that these older and more practical men simply perform their duties, as required by law, but, beyond this, manifest little interest in the welfare of the company. They are not allowed to develop any scheme of their own and their suggestions generally meet with a cold reception, the credit for the same, if the suggestion is used at all, going to the man higher up.

There is every evidence, in the mines, of wasteful expenditure and loss of useful material, owing to the lack of practical management underground. Timbers are left in the goaves; pack walls are poorly built; airways are choked by heavy falls, and the air current obstructed by sharp turns and long winding routes. While there are some good main haulage roads, the tracks in the cross gates and on stallroads are crooked and badly laid. To make coal mining in England pay better, no prophetic vision is needed to see that there must be more practical and less theoretical ability underground. The present existing conditions in the mines are detrimental to the best interests of all parties concerned.

EDWIN HUSBAND, Supt.,
Wadsworth Red Ash Coal Co.

Helena, Ala.

[Correspondents should never omit to give name and address when writing. If desired, the name will not be published. We regret that we have been unable to remit for some excellent contributions, because the writers have omitted to give either name or address, and but for their excellence, such unsigned matter would be discarded.—ED.]

# Study Course in Coal Mining

BY J. T. BEARD

## The Coal Age Pocket Book

**General Potential of a Mine**—An important application of the potential method, in mine ventilation, is the calculation of the potential value for the entire mine when the airways and shafts are of various dimensions.

**Example**—Calculate the general mine power potential in the following mine, shafts 1250 ft. deep:

| | | | Area | Rub. Sur. |
|---|---|---|---|---|
| Shafts, upcast and downcast | 8x10 ft., | 2500 ft. | 80 | 90,000 |
| Main airway ("A" seam), | 6x10 ft., | 3750 ft. | 60 | 120,000 |
| Cross-headings ("A" seam), | 6x 8 ft., | 2500 ft. | 48 | 70,000 |
| Tunnel to "B" seam, | 5x 8 ft., | 500 ft. | 40 | 13,000 |
| Return air course ("B" seam), | 5x14 ft., | 5500 ft. | 70 | 209,000 |

**Solution**—The total power on the air, in any circulation, is clearly equal to the sum of the powers absorbed in the several sections of the mine, as expressed by the following general formula:

$$H = \frac{kQ^3}{K\,33{,}000}\left(\frac{1}{X_1^3} + \frac{1}{X_2^3} + \frac{1}{X_3^3} + etc.\right)$$

It will be readily observed that this general formula, for a mine of various sections (K being the coefficient of efficiency of the ventilator), is derived from the power formula

$$H = \frac{1}{33{,}000}\left(\frac{Q}{X_u}\right)^3 = \frac{Q^3}{33{,}000}\,\frac{1}{X_u^3}$$

But, since $1/X_u^3 = k\ s/a^3$ and k being constant, it is much simpler in using the above general formula, to factor and write k outside of the parenthesis, which makes each of the potential values within the parenthesis what may be called a "part potential" whose value is, omitting k,

Part potential $\quad X_u = \frac{a}{\sqrt[3]{s}}$; and $\frac{1}{X_u^3} = \frac{s}{a^3}$

Now, calculating the value of $1/X_u^3 = s/a^3$, for each separate section of air passage in the mine given above,

Shafts, $\quad \frac{1}{X_1^3} = \frac{90{,}000}{80 \times 80 \times 80} = 0.1758$

Main airway ("A" seam), $\quad \frac{1}{X_2^3} = \frac{120{,}000}{60 \times 60 \times 60} = 0.5555$

Cross-headings ("A" seam), $\quad \frac{1}{X_3^3} = \frac{70{,}000}{48 \times 48 \times 48} = 0.6380$

Tunnel to "B" seam, $\quad \frac{1}{X_4^3} = \frac{13{,}000}{40 \times 40 \times 40} = 0.2031$

Return air course ("B" seam), $\quad \frac{1}{X_5^3} = \frac{209{,}000}{70 \times 70 \times 70} = 0.6093$

Value for entire mine $\left(\frac{1}{X_0^3}\right)$ ..... $2.1767$

The part power potential for this mine is therefore

$$X_0 = \frac{1}{\sqrt[3]{2.1767}} = 0.7716$$

## The Coal Age Pocket Book

**Example**—(a) From the part power potential calculated for the mine, on the preceding page, find the horsepower that will be required to circulate 30,000 cu.ft. of air per minute in a single current, assuming the ventilating fan to have a mechanical efficiency K = 60 per cent. (b) What water gage will be produced by the resistance in the mine, for this circulation?

**Solution**—(a) The required horsepower of the ventilator is

$$H = \frac{kQ^3}{K\,33{,}000}\,\frac{1}{X^3} = \frac{0.00000002 \times 30{,}000^3}{0.60 \times 33{,}000} \times \frac{1}{0.7716^3} = say\ 60\ hp.$$

(b) The mine water gage due to this circulation is

$$w.g. = \frac{kQ^2}{5.2\,X_u^3} = \frac{0.00000002 \times 30{,}000^2}{5.2 \times 0.7716^3} = 7.5\ in.$$

**General Mine Potential, Equal Splits**—It is possible to calculate the general mine potential when the air is equally divided one or more times, by simply multiplying the sectional area of the airway by the number of splits, as shown by the following example:

**Example**—A drift mine is opened on the triple-entry system. It is proposed to drive the main entries 7x10 ft. in section, a distance of 3000 ft. to the boundary. The cross-entries are to be driven double, 5x12 ft. in section and 1500 ft. to the side lines on each side of the main road, making in all 6000 ft. of cross-entries, including the returns. The main-return airways, on each side of the main intake are each 7x12 ft. in section and 3000 ft. long. Calculate (a) the horsepower on the air; and (b) the water gage produced.

**Solution**—The first step is to calculate the value $1/X_u^3 = s/a^3$ for each sectional division; thus

Main intake, 7x10 ft., 3000 ft. long: a= 70 sq.ft.; s=102,000 sq.ft.
Two splits, 5x12 ft., 6000 ft. long: a=120 sq.ft.; s=204,000 sq.ft.
Main returns, 7x12 ft., 3000 ft. long: a=168 sq.ft.; s=114,000 sq.ft.

Substituting these values in the formula for finding the part potential value for each section,

Main intake, $\quad \frac{1}{X_1^3} = \frac{102{,}000}{70 \times 70 \times 70} = 0.2974$

Two splits, $\quad \frac{1}{X_2^3} = \frac{204{,}000}{120 \times 120 \times 120} = 0.1181$

Main return, $\quad \frac{1}{X_3^3} = \frac{114{,}000}{168 \times 168 \times 168} = 0.0240$

Value for entire mine $1/X_0^3$ ..... $0.4395$

For the horsepower and water gage, we have

$$H = \frac{kQ^3}{33{,}000}\,\frac{1}{X_0^3} = \frac{0.00000002 \times 50{,}000^3}{33{,}000} \times 0.4395 = say\ 35\ hp.$$

$$w.g. = \frac{kQ^2}{5.2}\,\frac{1}{X_0^3} = \frac{0.00000002 \times 50{,}000^2}{5.2} \times 0.4395 = 4.2\ in.$$

# Inquiries of General Interest

## Overcasts and Stoppings

Would it be profitable or best to build overcasts and entry stoppings of such strength and thickness that they might reasonably be expected to resist the force of an ordinary local explosion of gas or dust?

Also, is the suggestion practicable to build stoppings of two separate walls, and fill the intervening space with stonedust, so that if the stopping is blown out by the force of an explosion, the stonedust would be thrown into the air, and perhaps, kill the explosion.

FIREBOSS.

Meadow Lands, Penn.

The first question has recently been thoroughly discussed in COAL AGE, under the title Collapsible Stoppings. We shall be glad to receive the views of our readers in reference to the stonedust suggestion, in connection with the building of stoppings in mine entries.

## Fan Ventilation

In a recent issue of COAL AGE, Jan. 24, p. 180, I noticed an interesting question in reference to operating two fans for the ventilation of the same mine in two separate sections, the return air from each section passing through the same return airway. I have a similar question that concerns our conditions here. It is as follows:

We are operating a mine that is extensively developed and in which the ventilation is becoming poor. The fan is producing, at the present time, 78,000 cu.ft. of air per min. against a 3.4-in. water gage. It has been proposed to install another fan, which will be a disk fan, 6 ft. in diameter, and which will ventilate a portion of the mine. Both fans, however, will be obliged to use the same return-air course for a distance of one mile, and both fans are to be operated as force fans or blowers.

The question is, Will both fans work successfully on this plan? I may state that the resistance of the main return-air course, at present, is equal to a 1.25-in. water gage. My own opinion is that the fan that is now in use will force air back through the portion of the mine intended to be ventilated by the small fan.

SUBSCRIBER.

Dayton, Penn.

In order to give an intelligent answer to this question, it would be necessary to know the length and size of the airways forming the two sections of this mine and the size of the main return airway. A plan should be given showing the present circulation and the proposed change. It is supposed that the present fan is a centrifugal fan capable of giving 78,000 cu.ft. per min. against a 3.4-in. water gage.

Though unable to offer an opinion of value, based on the data submitted, we may say that if a disk fan were to be installed in this mine, in order that it may assume its share of the work it would have to be capable of balancing the present installation. Under the ordinary conditions of mining, a 6-ft. disk fan would give, say, 50,000 cu.ft. of air per min., against a water gage varying from 2 to 2.5 in. This fan would hardly balance the action of the centrifugal fan now in use; and, as a result, we would naturally expect, as our correspondent has stated, that the present fan would still continue to force air into that portion of the mine intended to be ventilated by the disk fan. This is the best answer we can give with the information at hand.

## Mensuration, Lateral Surface of Cone

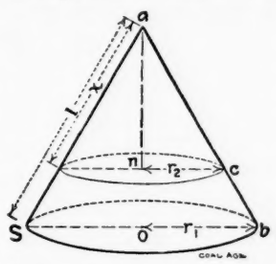
Please answer the following problem in the columns of COAL AGE:

The slant height of a right circular cone is 2 ft. At what distance from the vertex of the cone must the slant height be cut by a plane parallel to the base, in order that the lateral surface of the cone will be divided into two equal parts.

FRANK DEWEY, Asst. Foreman,
Bast Colliery.

Ashland, Penn.

Referring to the accompanying figure, let $a\,b\,s$ be a right cone whose slant height $a\,b$ is indicated by $l$. It is required to find the slant height $a\,c$ indicated by $x$ and determined by a plane parallel to the base of the cone and dividing its lateral surface into two equal parts. The lateral surface of a right cone is equal to the product of the circumference of its base into one-half its slant height. Denoting the respective radii $o\,b$ and $n\,c$ of the bases of these two cones, by $r_1$ and $r_2$, we have, from the terms of the question,




$$(2\,\pi\,r_2)\,x/2 = \tfrac{1}{2}\,(2\,\pi\,r_1)\,l/2$$

$$x = \frac{r_1}{r_2}\,\frac{l}{2}$$

But referring to the acompanying figure, the triangles $a\,o\,b$ and $a\,n\,c$ being similar, their corresponding sides are proportional. Therefore, the ratio of the two radii $r_1$ and $r_2$ is equal to the ratio of the corresponding slant heights $l$ and $x$, which gives

$$\frac{r_1}{r_2} = \frac{l}{x}$$

Substituting this value in the previous equation and solving with respect to $x$, we have

$$x = \frac{l^2}{2\,x};\ \text{or}\ x^2 = \frac{l^2}{2} = 0.5\,l^2$$

and $$x = \sqrt{0.5\,l^2} = 0.707\,l$$

That is to say, the required length of the slant height $a\,c$ is 0.707 times the slant height $a\,b$, in order that the lateral surface of the cone shall be equally divided. Or, in this case, $a\,c = 0.707 \times 2 = 1.414$ ft.

# Examination Questions

## Miscellaneous Questions

*(Answered by Request)*

*Ques.*—What power will be required for hoisting an output of 800 tons of coal from the inside parting to the bottom of the shaft, 5/8 of a mile, up an incline having a grade of 2 in. to the yard, allowing time for the return of the empties. The empty cars weigh one-half as much as the load they carry. The resistance of the cars is estimated as 1/60 of the gross load and as much power is required to move the rope as to move the cars. The speed of the rope is 3 miles per hour; the working day, 8 hr.; and the cars are moving four-fifths of the time?

*Ans.*—The length of the incline, or distance of haul, is $5/8 \times 5280 = 3300$ ft. The speed of winding, or velocity with which the cars move is $3 \times 5280 \div 60 = 264$ ft. per min. The time required for one round trip is $2 \times 3300 \div 264 = 25$ min.

Since the cars are running four-fifths of the time, and the working day is 8 hr., the total time of hoisting is $4/5\ (8 \times 60) = 384$ min. Allowing 25 min. for each round trip, the number of trips per working day is $384 \div 25 = 15+$ trips. This would leave $384 - (15 \times 25) = 9$ min. of extra time to allow for unavoidable delays. For an output of 800 tons hoisted in 15 trips, the weight of coal hoisted per trip is $800 \times 2000 \div 15 = 106{,}667$ lb. Since the cars weigh one-half as much as the load they carry, the weight of cars is 53,333 lb. per trip. The total load hoisted is, therefore, 160,000 lb. per trip.

For a grade of 2 in. per yd., or 1 in 18, the gravity pull, or pull on the rope due to the grade is $160{,}000 \div 18 = 8889$ lb. In like manner, the pull on the rope due to the resistance of the cars is $160{,}000 \div 60 = 2667$ lb. This makes the total pull on the rope, 11,556 lb. The power required to move the rope being equal to that required to move the cars, the total load in the engine is $2 \times 11{,}556 =$ say 23,000 lb. For a speed of winding of 264 ft. per min., the power consumed in hoisting this load is

$$H = 23{,}000 \times \frac{264}{33{,}000} = 184\ hp.$$

*Ques.*—If, while examining a fall in one of the entries in a mine, your safety lamp became suddenly extinguished, what gas or mixture of gases, would you say was present?

*Ans.*—A positive answer cannot be given to this question. The extinction of a lamp when examining a fall for gas may be due to an accumulation of "sharp" marsh gas ($CH_4$) above the fall. Or, it may happen that carbon dioxide, generated in an overlying seam that has been worked out and abandoned, is seeping down through the cracks and crevices in the strata above the fall. Frequently, a mixture of marsh gas and carbon dioxide is found accumulated in pockets in the roof and on the falls in mine workings.

The nature of the gas must be determined by observing closely the action of the flame of a safety lamp. The carbon dioxide ($CO_2$) will depress the flame before extinguishing it. Marsh gas ($CH_4$), mixed with air in insufficient quantity to support combustion, and known to miners as "sharp" gas, will agitate the flame before the latter is extinguished, the flame often leaving the wick and ascending in the lamp, instead of being depressed by the gas. A mixture of carbon dioxide and marsh gas will generally give a cap when the lamp is first introduced into the gas; but this cap quickly disappears as the fresh air in the combustion chamber of the lamp is replaced by the gas. This mixture is termed "flash-damp."

*Ques.*—A mine is opened on the triple-entry system, the three main entries being driven parallel to each other. The two outside entries are free from accumulations of gas, and are driven 90 ft. ahead of the middle entry, which is found to contain explosive gas at the face. Explain how this condition could occur.

*Ans.*—The gas, in this case, is evidently not uniformly distributed in the seam or the underlying or overlying strata. Its appearance in the middle entry, which has progressed only to a point 90 ft. back of the two side entries, would indicate that the gas comes from a feeder or fault-line encountered by the middle entry. It frequently happens that gas will follow a slip or fault-line.

*Ques.*—The manometric efficiency of a mine is 70 per cent. and the mine resistance gives a water gage of 3 in. (a) If the area of the port of discharge of the fan is 0.6 of the area of the port of entry, what is the "blowing-in pressure?" (b) For the same conditions, what is the "blowing-out pressure?"

*Ans.*—This question is a relic of the past. In actual practice, it is impossible to measure with any degree of accuracy either the "blowing-in" or the "blowing-out" pressure of a centrifugal fan. It was formally the custom to estimate these pressures in accordance with the principle that the pressure producing circulation varies as the square of the velocity of the current, or inversely as the square of the area of the opening; in which case the pressure ratio would be equal to the square of the inverse area ratio. Denoting the blowing-in and blowing-out pressures by $p_i$ and $p_o$, respectively, the corresponding relative areas being 10 and 6, in accordance with the statement of the question,

$$\frac{p_i}{p_o} = \left(\frac{6}{10}\right)^2 = \left(\frac{3}{5}\right)^2 = \frac{9}{25}$$

The mine pressure being $3 \times 5.2 = 10.4$ lb. per sq.ft. and the manometric efficiency 70 per cent., the total pressure or sum of all the pressures is $10.4 \div 0.70 = 14.857$ lb. per sq.ft. Subtracting from this the mine pressure, gives for the remaining sum of the blowing-in and blowing-out pressures $14.857 - 10.4 = 4.457$ lb. per sq.ft. But, the ratio of these two pressures being 9:25, the blowing-in pressure is

$$p_i = \frac{9}{9+25} \times 4.457 = \frac{9 \times 4.457}{34} = 1.18\ \textit{lb. per sq.ft.}$$

The blowing-out pressure is

$$4.457 - 1.18 = 3.277\ \textit{lb. per sq.ft.}$$

# Coal and Coke News

## Washington, D. C.

Attorney General McReynolds has filed his long-expected suit against the Lehigh Valley R.R. Co. on the ground that it is the principal factor in the combination alleged to control the anthracite output of the Pennsylvania mines. More than a dozen corporations and individuals are included as defendants and as being parties to a conspiracy to monopolize trade. The charges are the same as are already familiar in connection with the litigation in the past. It is pointed out in the bill that, through the alleged monopoly of the sale of coal produced along its line, the Lehigh Valley dominates the market at all points not reached by any other railroad, and has the power to fix without the check of competition the prices at which anthracite coal is sold. It is claimed that of 11,000,000 tons of anthracite annually carried by the Lehigh more than 82% is shipped for the account of the Lehigh Coal Co., which is described as a mere adjunct or instrumentality of the railroad itself. The litigation of 1910-11 is reviewed, and subsequent developments in conection with the sales company are described. The contract between the railroad company and the sales company, it is claimed, gave the latter unreasonably low rates for mined coal, fixed prices for coal to be mined and made other concessions of the same sort. It is alleged that the sales company's profits have been enormous, regular dividends of 2½% being paid, with an extra cash dividend of 25% after twenty one months' business and an additional extra dividend paid in stock, while a large surplus over and above dividends was retained by the company.

It is further alleged that the Lehigh R.R. Co. granted rebates and undue preferences to the coal company thereby violating not only the Sherman act but the railroad legislation of the United States.

It is understood to be the intention of the government to press the suit against the Lehigh Valley as vigorously as possible with a view to getting a thorough test of the general situation as affecting combinations of this kind, so that, if necessary at an early session of Congress, it may be attempted to revise the existing Interstate Commerce Act, insofar as such action may be found to be expedient, in consequence of the position taken by the Courts in this case.

* * * * * * *

Senator Walsh has introduced a bill to promote the mining of coal and other minerals on the public domain, in which he deals separately with the several items whose production it is sought to regulate. With reference to coal, the essential points in the measure are as follows:

SEC. 2. That deposits of coal or lignites belonging to the United States, exclusive of those in Alaska, may, at the election of applicants qualified to enter coal lands under existing laws and to lease mineral deposits under the provisions of this bill, be acquired from and after the passage of this Act, in accordance with the provisions of sections twenty-three hundred and forty-seven to twenty-three hundred and fifty-two, inclusive, of the United States Revised Statutes, and acts amendatory thereof or supplemental thereto, or may be leased, as hereinafter provided.

SEC. 3. That the Secretary of the Interior is authorized to lease any deposits of coal or lignite owned by the United States, outside of the Territory of Alaska, through advertisement, competitive bidding, or such other methods as he may by general regulations adopt, in blocks or tracts of forty acres each, or multiples thereof, and in such form as in the opinion of the Secretary of the Interior will permit of the most economical mining of the coal in such blocks or tracts, but in no case exceeding two thousand five hundred and sixty acres in any one block or tract, said lands to be in compact form, as nearly as may be, no tract to exceed in length two and one-half times its width.

SEC. 6 That for the privilege of mining, extracting, and disposing of the coal in the lands covered by his lease, lessee shall pay to the United States such royalties as may be specified in the lease, which shall not be less than 2 cents per ton, due and payable at the end of each month succeeding that of the shipment of the coal from the mine, and the annual rental payable at the beginning of each year, on the lands covered by such lease, at the rate of 25 cents per acre for the first year thereafter, 50 cents per acre for the second and third years, and $1 per acre for each and every year thereafter during the continuance of the lease, except that such rental paid for any one year shall be credited against the royalties as they accrue for that year. Leases shall be for indeterminate periods upon condition of continued operation of the mine or mines, except when operation shall be interrupted by strikes, the elements, or casualties not attributable to the lessee, and upon the further condition that at the end of each twenty-year period succeeding the date of the lease such readjustment of terms and conditions may be made by the Secretary of the Interior as may be authorized by law at the time of expiration of such periods.

## Harrisburg, Penn.

Testimony that the Central R.R. of N. J., which for more than a decade has been controlled by the Reading system, is not, and could not be, competitive with the Philadelphia & Reading Ry., was given on Mar. 17, by John F. Auch, vice-president, in charge of traffic of the Reading, speaking for the denfense in the new "anthracite-coal trust" suit of the government. The case involves nine anthracite-coal-carrying railroads and mining companies.

The hearing was held in the directors' room of the Reading Terminal, before Charles H. Guilbert, appointed master in the case by the United States District Court.

Mr. Auch submitted elaborate statistical data to prove that the interchange traffic of the Reading Ry. and the Central R.R. of N. J. could not be in any material degree competitive. The various interchange points in New Jersey and Pennsylvania, he showed, are merely railroad crossings and not sizable communities for the traffic of which railroads might compete. Practically all the interchange freight, Mr. Auch said, originated on the Reading lines destined for some point on or beyond the Jersey Central lines, or vice versa. Mr. Auch further declared that the Reading and Central R.R. of N. J. could in no sense be regarded as competitors for traffic between Bethlehem, Penn., and New York.

Reciting the causes that led to the purchase of a majority of the Central R.R. of N. J. stock by the Reading Co., Mr. Auch said this step was taken to procure for the Reading Ry. an entrance into New York, and to prevent a chaotic condition in the railroad situation that would have resulted had the Jersey Central fallen into other hands. The result, he said, would have been to shut the Reading out of New York completely. Mr. Auch maintained that the Jersey Central and Reading lines are mutually supplementary systems, and the very opposite of competitive.

Mr. Auch under cross-examination on Mar. 20, conducted by Mr. Coudert, counsel for the government, asserted that freight rates did not control anthracite prices. Mr. Coudert referred to a letter written by George F. Baer, president of the Reading, to T. P. Fowler, president of the Ontario & Western, under date of Oct. 1, 1905, in which Mr. Baer made the statement that if freight rates were reduced the coal companies would be compelled to lower their prices.

Testimony that any attempt to introduce new railroad competition in the Schuylkill region, where the Reading is in almost complete control, would be a costly failure, was given by Theodore Voorhees, vice-president of the Reading. Mr. Voorhees asserted that, owing to the narrowness of the mountain ravines in the Schulykill region, a competing road, taking second choice of route, would cost several times as much to construct as the Reading lines, and would have much heavier operating costs and greater fixed charges.

Mr. Coudert, counsel for the government, asked Mr. Voorhees why the Reading interests once spent $2,000,000 in what he termed "an illegal conspiracy" to prevent the building of a competing line. Mr. Coudert referred to the Temple Iron matter. Counsel for the Central R.R. of N. J. pointed out the projected line was intended to tap the Wyoming field and not the Schuylkill region.

It was brought out at the hearing, through A. T. Dice, general manager of the Reading, that the railway company never made any distinction between the Reading Coal & Iron Co. and the so-called independent coal companies in handling their product.

The Reading's control of the Wilmington & Northern R.R. came in for considerable questioning on the part of counsel for the government. The government contends that the Wilmington & Northern is a competing line between Reading and Wilmington, Del., but the Reading people assert that there were physical conditions why a large tonnage could not be sent over this line and to do so would require the building of almost an entirely new line. The Reading people also assert that the grades are steep on some parts of the road and that the cost of shipping coal over the Wilmington & Northern from the anthracite-coal regions to Wilmington would be very much greater than it is by going over the Reading lines, via Philadelphia to Wilmington.

The hearing was adjourned until Mar. 31.

## PENNSYLVANIA

### Anthracite

**Luzerne**—John M. Mack, president of District 1, of the U. M. W. of A., has issued an order proclaiming Apr. 1 as a holiday in commemoration of procuring of the eight-hour day, and ordering all members to celebrate the day by remaining from work.

**Scranton**—Examinations for mine foremen and assistant mine foremen in the anthracite districts will be given April 15 and 16 in the various towns in the 21 districts running from Forest City to Williamstown. It is stated that more attention will be paid to the character, conduct, and education of the applicant than heretofore. All persons taking the examination will be required to show a miner's certificate.

**Lykens**—Mine Inspector C. Price, of the 20th Anthracite District, included in which is the large East Brookside Colliery, near Tower City, where 20 lives were lost in August by an explosion, in his annual report shows a total of 36 fatalities in that district. The production of coal, per life lost, was 67,137 tons. There were shipped to market 1,964,723 tons, and the total production was 2,416,915 tons.

**Edwardsville**—Operations have been suspended at the Woodward colliery, owned by the D. L. & W., in order that necessary improvements may be made to the interior workings. Many doubtless wonder why suspensions for repairs are so numerous at this colliery, but it must be remembered that the Woodward is no longer a new mining operation. In times gone by more coal was sent to this market from this one concern alone than half a dozen other collieries, and it is still one of the greatest coal producing collieries in the entire anthracite region.

### Bituminous

**Patton**—The supply and oil house of the Pennsylvania Coal & Coke Corp. was destroyed by fire on March 19. The burning oil made a blaze that was visible on the snow for many miles around. Defective wiring is thought to have been responsible for the blame.

**Lansford**—The steam shovels and scraper lines operated by the Lehigh Coal & Navigation Co. for more than a year, have almost removed the huge culm bank in the very heart of this growing town. This company is making a special effort to have the bank removed by spring in order to permit the erection of a fine $200,000 high school building.

**Shamokin**—After being enveloped by a huge blaze of sulphur at the Buck Ridge colliery on Mar. 20, John Soplasky, a driver boy, tried to walk along the gangway to alarm miners at work. A rescuing party found him terribly burned, and he will probably die. Five men in the rear of the boy and who had heard his cry, as the flaming sulphur approached, lay on their faces and escaped being burned. They were overcome by bad air. The rescuers took them to the surface, where they were revived. The fire was extinguished the next day.

**Shenandoah**—As George W. Isgate, 55 years old, and John Decrish, 18 years old, employed at the Thomas Colliery (sometimes known as the Kehley Run) were warming themselves on the morning of March 20 in a shanty on top of a culm bank on the side of the Locust Mountain when the earth opened and both men and shanty were swallowed. The breach is about 60 ft. in circumference and 75 ft. deep, and apparently leads to old workings 500 ft. deep. Rescuers set to work in hope the victims were still alive, but have to work cautionusly as the earth and rock were still caving on March 22. The shanty contained a large heating stove, which caused fear of the workings catching fire.

State Mine Inspector A. B. Lamb and officials of the company are directing the rescue work. Thousands have been attracted to the scene, and an extra force of police was called to keep them away from danger.

John Drimes, employed near the shanty, when the others disappeared, saved himself by grasping a steam pipe and clinging on until help arrived.

The colliery is operated by the Madeira-Hill Company.

## KENTUCKY

**Whitesburg**—It is reported that the new mining towns of Benham, Poorfork, Dizney and Yocum's Creek, in the Harlan County field, will receive power from the Pocket, Va., station, making it unnecessary for the several companies interested in that part of the county to erect individual power plants.

**Louisville**—The Louisville Property Co., through which the Louisville & Nashville Ry. and the Atlantic Coast Line R.R. control a large area of coal lands in eastern Kentucky, held its annual meeting last week, in spite of the injunction proceedings brought by I. W. Bernheim, a minority stockholder, who brought suit to compel a change in management. Milton H. Smith, president of the Louisville & Nashville, retired as president of the property company, being succeeded by W. L. Mapother, vice-president of the railroad company.

## OHIO

**Martin's Ferry**—Fire for a time threatened the mining town of Titonsville, near here, when nine dwellings of the Russel Coal Co. were destroyed recently. Powder stored in a number of the houses hampered the firemen in fighting the flames.

**Columbus**—The mine operators in Ohio are coöperating with the state mine department and the new Safety Superintendent, J. M. Roan, in educating the miners in all districts to look after safety to a larger degree than formerly. Mr. Roan has held a number of meetings with miners recently in which he instructed them in safety methods. An especial effort is made to minimize accidents in the eastern Ohio district, where they have been the most numerous.

## OKLAHOMA

**Oklahoma City**—The State of Oklahoma is planning to enter the mining business, in the hope of providing enough coal for state institutions. The state attorney-general has been asked to condemn coal depsits underlying the penitentiary farm at McAlester. It is planned by the state board of prison control to utilize convict labor in working the operation. It is estimated that in this way coal can be provided for the state institutions at less than $1 per ton, as compared to an average of $2.70, paid during the past year. The fourth Oklahoma legislature passed an act authorizing the mining of coal under the penitentiary farm, and future proceedings will be based on this measure.

## KANSAS

**Pittsburg**—Coal miners in district No. 14 of the United Mine Workers of America will pay 20c. monthly for the benefit of the strikers in the Michigan copper zone. A vote recently was taken on the proposition and showed a big majority to be in favor of the extra assessment. District No. 14 comprises the Pittsburg, Kan., mines. Of 12,000 miners in that district, about 10,000 are working, indicating that about $2000 monthly will be raised by the assessment. The plan took effect Mar. 1.

## ILLINOIS

**Gillespie**—The week ending Mar. 14 was a banner week of coal hoisting at the Superior Coal Co.'s mines here. The three mines produced 13,432 tons for one day, the tonnage for the mines being as follows: No. 1, 4393; No. 2, 4431, and No. 3, 4608.

**Springfield**—The mine of the Cora Coal Co. at Andrew, north of this city, on the C. P. & St. L. R.R., was damaged by fire a few nights ago. The loss is estimated at $8000, and is partially covered by insurance. In addition to the framework of the shafts, four coal cars, two of them loaded, were burned.

## COLORADO

**Trinidad**—The Colorado Fuel & Iron Co. have brought suit for damages to the extent of $1,000,000 against the United Mine Workers of America; and have secured body judgment against John T. White, president; Frank J. Hayes, vice-president, and a score of others. The charge to injure the business of the corporation through a combination of mine workers, in the basis of the suit.

## INDIANA

**Terre Haute**—The Essanbee Mines Co. has moved its headquarters from Clinton to this city.

**Sullivan**—The Carlisle Coal & Clay Co. has reopened its mine, after three years' idleness. It employs 40 men.

**Boonville**—At a labor conference in the First District of Indiana, a resolution was adopted, opposing the mining of coal in the state by the stripping process.

**Terre Haute**—The Indiana Bituminous Coal Operators Association, at its quarterly meeting, reëlected the following officers: Hugh Shirkie, Terre Haute, president; David Engle, Oakland City, vice-president; Phil. H. Penna, Terra Haute, secretary-treasurer. Thirty operators, representing all fields in the state, were present.

## CALIFORNIA

**Vallejo**—After 100 tons of coal had been removed from the hold of the army collier Jupiter, it was discovered on March 18, that she had not been on fire and that no damage had been done. Spontaneous combustion had progressed far enough to start the coal smoking, but had not reached the point of ignition.

## ARKANSAS

**Clarksville**—The Spadra Creek Coal Co.'s "Monkey Run" coal plant was destroyed recently by fire, with a loss of approximately $50,000.

## CONSTRUCTION NEWS

**Fairmont, W. Va.**—The Fairmont Mining Machinery Co. is planning a large addition to its present plant. This addition will be built during the coming summer.

**Richmond, Ky.**—C. G. Bowman, banker and coal operator, has contracted with Todd & Son for the construction in Hazard, Ky., of a two-story and basement brick dwelling 80x88 ft., which will be used for storerooms and offices. It will cost $22,000.

**Fayette, Mo.**—The Howard County Coal Co. will install a $25,000 brick plant near their coal mine, recently known as the Russell mine. They will manufacture bricks from the fireclay, which will be produced at the same time that the coal is mined.

**Big Creek, Ky.**—The Big Creek Coal Co. are starting work on another new coal mining plant at head of Pond Creek, and the construction of a two-mile spur of the Pond Creek R.R. to the new plant. Mining will begin by July 1, it is expected. They will develop 1000 acres around the new plant.

**Greensburg, Penn.**—The S. J. Harry Co. has been awarded a contract by the Salina Coal & Clay Co., for sinking and timbering two shafts near Avonmore. The shafts will be used for mining clay and for mining the Freeport vein of coal. The coal in the vicinity is said to be of an excellent quality.

**Leavenworth, Kan.**—It has been announced that the owners of the Home mine which was destroyed by fire recently will start rebuilding at once. Careful estimates place the loss at $25,000, two thirds of which is covered by insurance. No harm was done to the underground operations or timbering.

**Whitesburg, Ky.**—The Mineral Development Co., general offices at Philadelphia, Penn., have announced the development of 500 acres of coal lands on Colly Creek near Ermine, five miles from here, and the building of a four-mile branch line of the Lexington & Eastern R.R. The work of the new development is billed to start Apr. 1.

**Salina, Penn.**—The Salina Coal & Clay Co., of this place, a corporation with an authorized capital stock of $175,000, has in process of erection here, one of the largest fire-brick plants in the country, which is expected to have a daily capacity of 100,000 high-grade fire-bricks. In addition to its output of fire-bricks, the company expects to ship between 700 and 800 tons of coal daily. E. A. Serrin, of Greensburg, Penn, general manager of the company, is in active charge of the work.

**Balboa, C. Z.**—The Isthmian Canal Commission has just awarded to the Ingersoll-Rand Co., of New York City, the contract to furnish three large direct-connected, electrically-driven air compressors, of the Duplex type, embodying the new Ingersoll-Rogler valve. The combined capacity of these units will be 10,000 cu.ft. They will be installed in the Balboa shops, where the air will be used for general repair work in the shops, and also on the new dry dock. This equipment is to form a part of the permanent canal equipment.

**Logan, W. Va.**—The Main Island Creek Coal Co., of which John Laing, of Charleston, W. Va., is president, recently awarded a contract to the Link-Belt Co., of Nicetown, Philadelphia, for designing and building their new tipple equipment, consisting of an entire steel tipple, including apron conveyors for bringing the coal down the hillside, shaking screens for separating it into the various sizes and picking tables and loading booms for better preparing the coal for the trade and permitting it to be loaded into railroad cars with the minimum amount of breakage. The tipple will be erected near here.

## INDUSTRIAL NEWS

**Cherokee, Kan.**—The Hamilton Coal Co., which recently abandoned prospecting on land near here, has resumed work on the Russell farm.

**Waynesburg, Penn.**—T. R. Huffman and G. E. Rice recently sold to the Bixler-Ohio Coal Co., of Ohio, 500 acres of coal for $37,500, and engineers are now on the property laying out the mines.

**Cross Creek, Penn.**—John A. Bell, representing Pittsburgh capitalists, has given notice to farmers in this township that he will accept options on the purchase of their coal, aggregating 1220 acres. The price for the coal is said to be $125,000.

**Indianapolis, Ind.**—A judgment of $6625 was obtained in the Superior Court of this city, by William C. Shoemaker against the receiver for the Carbon Coal & Clay Co., for use of machinery valued at $30,000, on which the company failed to pay the rental and other charges.

**Princeton, Kan.**—Much interest is manifested by operators of Missouri in recent discoveries on the Vernie Boxley farm near here, where a vein 45 in. thick was struck. The coal was found at a depth of 512 ft., the vein being covered by 5 ft. of slate. A couple of feet of fireclay underlies the coal. Drilling also is being done on the Kesteron and Mason farms, near Princeton.

**Joplin, Mo.**—The American Concentrator Co., of this city, are moving their entire business to Springfield, Ohio, where they will be permanently located in future. The new location will provide very much better facilities for the manufacture of their products, and it is the intention of the company to erect immediately an up-to-date testing plant for handling coal and ores of every description.

**East Liverpool, Ohio**—The Rhea mine at West Point, near East Liverpool, has been bought by the Kirk-Dunn Coal Co. The main office will be at Salem, Ohio. Many changes and improvements are being made. A new tipple is being constructed and the mine will be operated electrically. This company has recently acquired over 3000 acres of coal land under which lies a 5-ft. vein of fuel.

**Birmingham, Ala.**—The Government is now making an exhaustive test of Alabama coals at the ports of Mobile and Pensacola, for use on war vessels, etc., and the reports are that the coal has been found to be equal to the majority of the West Virginia and Pennsylvania coals, which they have been using. It is expected that this test will result in the Government placing contracts for Alabama coal for use through these ports.

**Calgary, Alta.**—Sir Donald Mann, vice-president of the Canadian Northern Ry., states that by opening up a new line making connection with the Brazean coal fields of Alberta, about 250 miles north of the Crows Nest fields, the railway will be enabled to secure its coal supply at a dollar per ton less than other roads. The direct connection established between the mines and the cities of Edmonton and Calgary will reduce the cost of coal at those points to one-half of present prices.

**Montreal, Que.**—H. A. Lovett, of Montreal, president of the Canadian Coal & Coke Co., which last year acquired the properties of the Letlebridge Collieries, Ltd., Western Coal & Coke Co.. Ltd., Pacific Coal Fields, Ltd., and St. Albert Collieries, Ltd., announces that for the purpose of permanent financing the company has authorized the issue of $3,000,000 par value of bonds, and for temporary financing has authorized the issue of $1,500,000 of short-term securities, for which the bonds are pledged as collateral.

**Louisville, Ky.**—Roy Wilhoit, president of the bankrupt Wilhoit Coal Co., has purchased the assets of the company, including about 2000 acres of valuable coal land on Ewing's Creek, in the Harlan County field, for $31,000. Mr. Wilhoit states that he will handle the properties at present through Roy Wilhoit & Co., which have been organized for that purpose, with the view of leasing two of the three seams on it for operation, the other being now under lease to the Walkins Creek Coal Co., which is operating it.

## PERSONALS

Alfred W. Calloway was recently elected president of the Davis Coal & Coke Co., of New York City, in place of J. M. Fitzgerald, resigned.

Albert E. Oliver, formerly superintendent of the National Fuel Co., at Bowen, Colo., has resigned to take charge of the Huerfano Coal Co., Walsenburg, Colo.

L. W. Robinson, of Punxsuatawney, Penn., president of the Rochester & Pittsburgh Coal & Iron Co., has purchased the estate of the late Joseph Jefferson on Jupiter Island, in Florida.

Edgar Connell, superintendent for the last five years of the Enterprise colliery, at Shamokin, Penn., operated by W. L. Connell, of Scranton, resigned on March 18, to enter the retail coal business. He will be succeeded by Alfred Hall, of Scranton.

H. F. Miller, who for the past year has been associated with the advertising department of the Otis Elevator Co., and for four years previous to that, with the Western Electric Co., has been appointed advertising manager of the Goulds Manufacturing Co., of Seneca Falls, New York.

Edward H. Coxe, of LaFollette, Tenn., has resigned as general manager of operations for Neil Robinson, receiver of the LaFollette Coal, Iron & Ry. Co., to take effect May 1. Mr. Coxe will be succeeded by George M. Shoemaker, now superintendent of the Rex No. 1 mine for the receiver. J. M. Page, who was for some months superintendent of Rex No. 2 mine, recently suspended, will succeed Mr. Shoemaker as superintendent of Rex No. 1 mine.

J. B. Nessel has been appointed general freight agent of the Pittsburgh & Lake Erie R.R., to fill the vacancy occasioned by the promotion of W. A. Newton, to a similar position with the New York Central & Hudson River R.R. Mr Nessel was an incumbent of the office some two years ago, at which time he was transferred to Cleveland as general coal, coke and ore agent. His re-appointment is especially gratifying to the Pittsburgh district people.

W. L. Morgan, formerly state mine inspector, eighth district, East St. Louis, Ill., was appointed instructor in the Miners' and Mechanics' Institute, by Dr. James, president of the University of Illinois. The appointment was approved by the board of trustees of the University Feb. 16, 1914. The law authorizing the formation of the Miners' and Mechanics' Institute was the act of the 47th assembly, but it was left for the next legislature to provide the means for carrying this law into effect.

## OBITUARY

Fred F. Lange, one of the best known mining engineers in the Oklahoma coal field, was found dead in his office at McAlester, Okla., on Mar. 20. His lips were burned with carbolic acid, and a party-filled bottle of the same drug was found beside the body. Mr. Lange formerly was in the employ of the government. At the time of his death, he was in the segregated land office at McAlester.

William C. Bullitt, died early on Sunday morning March 22, at his home in Philadelphia. Prominent for many years as a leader in reform movements, he was one of Philadelphia's best-known citizens. He was a member of the firm of Casther, Curran & Bullitt, large domestic and export coal shippers and mine owners.

Mr. Bullitt was the son of the late John C. Bullitt, one of the leaders of the Philadelphia bar, who is best remembered as president of the commission which drafted the Bullitt law, creating the present city charter of Philadelphia. The son was born on June 18, 1856, on his father's country place in Chestnut Hill. William C. Bullitt received his primary education in Dr. J. W. Faire's classical school and then entered the University of Pennsylvania, from which he graduated in 1876. He studied law at the University of Virginia and later in his father's office.

From 1885 to 1909 Mr. Bullitt was closely identified with the executive department of the Norfolk & Western R.R. His first connection with that corporation was as assistant to the president. Subsequently he was elected a vice-president. He became an authority on constitutional law, and entered other fields, ending with the coal operating firm in which he was a partner at the time of his death. The concern has extensive mining operations in the Pocahontas coal field in West Virginia.

Mr. Bullitt's clubs were the Philadelphia, Rittenhouse, Philadelphia Country, City, Southern, St. Anthony, and University, of New York. He is survived by his widow and three sons.

## NEW INCORPORATIONS

**Johnstown, Penn.**—The Conemaugh Smokeless Coal Co. has been incorporated here with a capital of $500,000.

**Carlisle, Ind.**—The Chicago-Carlisle Coal Co. has been incorporated here, with $100,000 capital stock, to operate coal mines. The directors are George A. Van Dyke, Webster A. Patterson and Robert J. Frank, all of Chicago.

**Bloomington, Ind.**—The McDaniel-Freese Coal Co. has been incorporated here, with $15,000 capital stock, to deal in fuel. The directors are Simeon C. Freese, A. Freese and Lucian C. McDaniel.

**Dover, Del.**—Articles of incorporation were filed here at the State Department for the Columbia Coal Co., capital $5,000,000. The objects are to acquire oil, coal and mineral lands in all parts of the United States, especially in Western Pennsylvania and Ohio. The incorporators include W. M. Pile, George C. Steegler and Lawrence W. McCarthy.

**Allbright, W. Va.**—The Cheat River Coal Co. has been organized here to mine and market coal and other minerals. The capital stock is $500,000, of which $50,000 has been subscribed and paid. J. Clyde Markley, A. R. Falcom, S. T. Seale, J. W. Menesee and R. W. Mason, all of Allbright, are incorporators

**Birmingham, Ala.**—The Canal Export Coal Co. has been organized with a capital stock of $300,000, of which $165,000 has been paid in. The new company will engage in coal mining, selling and exporting on a large scale. R. H. Elliott, of Birmingham, is president; E. P. Kimbrough, of Greensboro, vice-president; W. C. Lovejoy, of Montgomery, secretary; and R. B. Evins, of Greensboro, general council. The main offices of the company will be located in Birmingham.

## TRADE PUBLICATIONS

**Third Annual Report of the Director of the Bureau of Mines, 1912-13.** 118 pp., illus.

**Permissible Explosives Tested Prior to Jan. 1, 1914.** By Clarence Hall. Bureau of Mines, Tech. Paper 71; 12 pp.

**Electric Switches for Use in Gaseous Mines.** By H. H. Clark and R. W. Crocker. 1913. Bureau of Mines, Bull. 68; 38 pp., illus.

**The Sampling and Examination of Mine Gases and Natural Gas.** By G. A. Burrell and F. M. Seibert. Bureau of Mines, Bull. 42; 116 pp., illus.

**Production of Explosives in the United States During the Calendar Year 1912.** Compiled by A. H. Fay. 1914. Bureau of Mines, Tech. Paper 69; 8 pp.

**A Preliminary Report on the Utilization of Petroleum and Natural Gas in Wyoming.** By W. R. Calvert. 1913. Bureau of Mines, Tech. Paper 57; 23 pp.

**Department of the Interior,** Bureau of Mines. "A Preliminary Report on Uranium, Radium and Vanadium." By Richard B. Moore and Karl L. Kithil, 101 pages, 6x9 in., illustrated.

**Reports of the Topographic** and Geological Survey Commission of Pennsylvania, 1910-1912. Cloth-bound volume, 6¼ x 9½ in., 182 pages, illustrated with maps, drawings and halftones.

## CATALOGS RECEIVED

**The Dræger Oxygen Apparatus Co.,** Pittsburgh, Penn.—"Here it is at last! What everybody has been wanting!" The Dræger self-rescuer. Eight pages, 6x9 in., illustrated.

**New Link-Belt Data Book on Silent Chain Drives**

For the first time in history, an Engineering Data Book has been published by a manufacturing concern, which will enable users of power to select the correct Silent-Chain Drives for their work and determine exact costs from list prices shown in the book. Besides giving complete Engineering Information on Silent-Chain Driving in simple and compact form, Data Book No. 125 describes many uses of Silent Chain for the efficient transmission of power and gives specific reasons and illustrations showing application in a large variety of uses. Link-Belt Silent Chain is a series of links connected by joints which consist of segmental case-hardened bushings and case-hardened steel pins. The chain is as flexible as a leather belt—as positive as a gear. Its rated efficiency is 98.2 per cent. on actual test. It will transmit any amount of power quietly. Over 200,000 installations, we understand, were drawn upon for the information contained in this data book. The book is the only work of its kind and consists of 112 pages, bound in flexible red cover. Copies can be obtained free of charge by addressing the manufacturers, Link-Belt Co., 39th St. and Stewart Ave., Chicago.

# Coal Trade Reviews

## General Review

**Spring business in anthracite opening up buoyantly, with numerous orders from all points. Some last-minute buying in bituminous, but consumers mostly show a discouraging lack of interest in the impending suspension. Railroads beginning to accept consignments in the Lake trade.**

The coal year is closing with current business in anthracite at a complete standstill but a marked activity on negotiations for the new year. As usual, the individual operators initiated selling at the April cricular about the middle of this month, but the big companies have consistently maintained the regular winter schedule, although most of the loading during the past week has been for April delivery at the spring prices. The line trade is also active on the new business. The unexpectedly long duration of cold weather has served to clean up stocks in an unusual manner, and a heavy trade is anticipated through April and May.

On the eve of what appears to be a certain suspension in the principal bituminous coal districts of the country, the market continues relatively dull and listless. Some last-minute business has developed, causing a slight stiffening in prices, but, on the whole, the trade is far from what would normally be expected at this time. In the Pittsburgh district, occasional shading of prices is noted, though the large companies are demanding premiums and the nominal market continues at the regular circular. There is little confidence in the possibility of a long suspension and consumers seem to be well stocked for any emergency that may arise.

In Ohio, consumers, as a rule, refuse to be influenced by the possibility of a suspension, while the warm weather has caused a lull in the domestic business and dealers are endeavoring to clean up stocks rather than accumulate supplies. The railroads are beginning to accept lake coal, which may relieve the pressure; contracts in this line are being negotiated on the same basis as last year, but subject to any change in the wage scale.

The spot demand at Hampton Roads is light, the movement being confined almost entirely to contract; other West Virginia coals are dull and heavy, in spite of the near approach of the lake shipping season. The eastern Kentucky district, which will not be involved in the labor controversy, is anticipating a heavy business in the event of a suspension. The feature of the Southern market at the moment is a sharp decline in the prices of fuel oil, which may seriously affect the coal business.

The general indifference of consumers to the possibility of a serious strike has created a great deal of uncertainty in the Middle Western markets. There has been some stocking, particularly on the part of the railroads, which has developed a hardening tendency in the market, but this is not by any means of notable proportions. Contracts for the new coal year are being signed without any provision for increased cost of production.

## EASTERN MARKET

### BOSTON

**Pocahontas and New River extremely dull but less anxiety over prices. No change in Pennsylvania grades, although a fair movement all-rail, due in part to possibility of suspension. Anthracite stocks fast running down and a good trade prospect for April. Stove shortage looks serious.**

**Bituminous**—The situation on the Hampton Roads coals is practically at a standstill. There is ample supply at the loading piers and bottoms are despatched in record time. The few buyers here that are interested in making early purchases are now all cared for, and those who preferred to postpone are refusing to be hurried. A slower or duller period has not been experienced in this market since the summer of 1912. The price level has not been modified, however, and all hands seem content to await developments. On the whole there is rather less anxiety over price-shading than a week or two ago, and that is a hopeful sign. The producing interests are about agreed that nothing is to be gained by forcing coal on a reluctant and hesitating market.

The supplies of spot fuel at the distributing points are small and with only a moderate inquiry. The continued cold weather has given the trade a slight impetus but the outlook is hardly encouraging.

Aside from requisitions for shipment in conjunction with anthracite from Philadelphia the demand for the Pennsylvania grades is without special change. There is only a scattering business and then only for the most popular coals. All-rail the movement is fair, considering general conditions, and prices are showing up rather strong. The possibility of a suspension Apr. 1 is an element in that territory particularly but what uneasiness there is exists only in mild form at the present writing.

**Anthracite**—Stocks that were kept light in anticipation of warm weather and early April shipments have been fast depleted the past two weeks and the prolonged winter has had dealers guessing. They are running borrow and loan accounts with one another on the various domestic sizes and the trade is in excellent shape for the beginning of the new season.

The problem of getting a sufficient supply of stove is a serious one with practically all the dealers. The shipping companies are firm in declining orders that do not include a fair amount of other sizes.

Current quotations on bituminous at wholesale are about as follows:

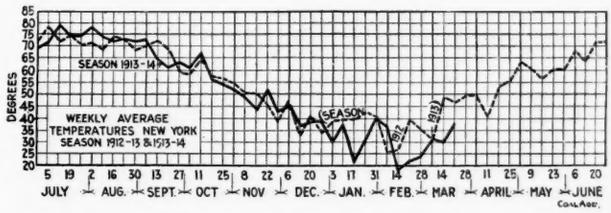
| | Clearfields | Cambrias Somersets | Georges Creek | Pocahontas New River |
|---|---|---|---|---|
| Mines* | $0.95@1.50 | $1.25@1.65 | $1.67@1.77 | |
| Philadelphia* | 2.20@2.75 | 2.50@2.90 | 2.92@3.02 | |
| New York* | 2.50@3.05 | 2.80@3.20 | 3.22@3.32 | |
| Baltimore* | | | 2.85@2.95 | |
| Hampton Roads* | | | | $2.80@2.85 |
| Boston† | | | | 3.73@3.83 |
| Providence† | | | | 3.68@3.78 |

*F.o.b. †On cars.

### NEW YORK

**Considerable activity in anthracite at the spring circular. Prepared grades generally easy but all the steam sizes short. Bituminous at a standstill pending the conclusion of the labor conferences. Demand light.**

**Anthracite**—The close of the coal year finds practically all of the business being negotiated at the opening circular. This has been the market with individuals since Mar. 20, and, although the companies are nominally maintaining their winter circular, there is no business being negotiated on this basis. Loading at the tidewater piers is entirely at the April figures, but deliveries will not be made before that time. The line trade is also good on April business, and the indications point to an active business through April and May, due to the unexpected duration of low temperatures.


DEGREES
SEASON 1913-14
WEEKLY AVERAGE TEMPERATURES NEW YORK SEASON 1912-13 & 1913-14
JULY AUG. SEPT. OCT NOV DEC. JAN. FEB. MAR APRIL MAY JUNE

In the prepared grades, stove is quite short with some, but long with others, while chestnut is short all along the line, egg in good demand, with a fair supply, and pea the same The high-grade buckwheats are scarce, even at premium prices, while the low grades are also short. The better qualities of rice are practically out of the market entirely, and the off grades difficult to obtain at premium prices. The high grades of barley are equally as scarce as rice, but the others are in fair supply at normal prices. We quote the New York hard-coal market on the following basis:

| | Upper Ports | | Lower Ports | |
|---|---|---|---|---|
| | Circular | Individual | Circular | Individual |
| Broken | $5.00 | | $5.05 | |
| Egg | 5.25 | $4.85@5.35 | 5.30 | $4.80@5.30 |
| Stove | 5.25 | 4.85@5.35 | 5.30 | 4.80@5.30 |
| Chestnut | 5.50 | 5.10@5.55 | 5.55 | 5.05@5.50 |
| Pea | 3.50 | 3.55@3.65 | 3.50 | 3.50@3.60 |
| Buckwheat | 2.75 | 2.75@3.00 | 2.70@3.45 | 2.60@2.90 |
| Rice | 2.25 | 2.25@2.35 | 1.95@2.20 | 2.00@2.30 |
| Barley | 1.75 | 1.75@1.85 | 1.70 | 1.60@1.80 |

**Bituminous**—The uncertainty in the labor situation has brought the local market to a complete standstill. There appears to be little stocking, and the agencies are in doubt about accepting what orders do come in, because of possible difficulties in filling them. A slightly increased demand is noted, due, in part, to anxiety over the labor situation and also to the colder weather. Considerable lake coal is reported sold in West Virginia and slack continues stiff in the Fairmont region. Local buyers are showing a desire to close contracts at last year's figures, or better, where these represent the lower opening scale. Eastern consumers are content to hold off, pending further developments.

The car supply on the Baltimore & Ohio R.R. have been deficient, which has withheld considerable tonnage. Mines are reported to be working under increased production. We continue last week's quotations which are probably a little stiffer, as follows: West Virginia steam, $2.50@2.60; fair grades Pennsylvania, $2.60@2.70; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; George's Creek, $3.15@3.25.

### PHILADELPHIA

**Anthracite quiet, with the exception of steam sizes, which continue in good demand. Better tone to bituminous, indicated by increased tonnage, and slightly better prices.**

**Anthracite**—Outside of a slightly increased demand for coal at retail, caused by the lower temperatures of last week, the domestic market is simply marking time, awaiting the opening of the spring business. Pea, buckwheat and rice, however, not being effected by the discount, still continue in good demand, and while the market lasts, the operators are producing and lifting from stock every ton possible. The advent of mild weather is likely to cause a decided falling off in the call for these latter sizes, as they are largely used for the generation of heat in the large office buildings and apartment houses.

The first of next week will see the opening of the season of 1914 and 1915 and indications point to an active demand for at least two or three months. The unusual weather conditions during March has reduced dealer's stocks, to such an extent that they will go into the month with little or no coal. It is understood that there will be no change whatever in the circular prices with the exception that the state tax will apply on all sizes.

It has not been a particularly successful year for the retail dealers in this locality. The open weather prevailing until March, when one snow storm followed another, making deliveries expensive and rapidly wiping out any profits made earlier in the year, caused the season to be a poor one. The fact that dealers were able to dispose of practically all of their stocks, is about the only bright spot in the situation; it is the exception that Apr. 1 finds the dealers with cleaned up yards.

**Bituminous**—Slightly better conditions mark the situation in bituminous trade, as indicated by heavier production, and higher prices. This may or may not be due to the possibility of trouble on the first of April, but it is fact that there is a disposition on the part of large users to take on a surplus. Quotations are from five to ten cents better than last week, and with the car movement again normal, deliveries are fairly prompt.

### BALTIMORE

**Poor transportation stiffening up the soft coal trade but gas-coal market still weak. Continued cold weather helps the anthracite business.**

With nearly all the Pennsylvania operators complaining that they cannot get enough cars to move the coal as desired, a stiffening of the market has developed. Inquiry showed that little or no Pennsylvania steam coals were offering at the mines for quick delivery at below 95c. and $1, while the better grade fuels were easily commanding from $1.15 to $1.35.

The weakest feature of the market just now is the West Virginia gas coals. Even the approach of the lake season does not seem to help the situation. Three-quarter is freely offering at 85c., and even less at times. Slack, as a result of a sharp demand from the cement industry, is showing renewed strength. West Virginia steam coals are selling at about 90 to 95c. at the mines.

Considerable coal has been loaded at the piers recently, the railroads having been able to clean up all the surplus that accumulated due to their inability to rapidly discharge frozen cars. A number of large shipments are being made the present week on foreign account. The coastwise shipping remains rather dull, except for the movement in company-owned collieries, principally to New England ports.

More snow at the outset of the present week, with a temperature at times below the twenty mark, boosted the retail anthracite trade. The present winter, while mild at the outset, has been much longer drawn out than for a number of seasons past.

## CENTRAL STATES

### PITTSBURGH, PENN.

**No prospect of scale settlement at Chicago conference, and suspension in prospect. Slightly improved demand due wholly to this prospect, but prices merely maintained at circular level. One coke contract at an advanced figure but general market quotable unchanged.**

**Bituminous**—The Interstate Joint Conference, in session at Chicago since Tuesday, Mar. 17, has reached no agreement on a wage scale for two years or four years from Apr. 1, and is not at all likely to reach any. Reports are in the circumstances more or less untrustworthy. One is to the effect that the miners are willing to renounce the mine-run demand if the check-off is continued.

Demand for coal has slightly increased, and mines are operating still better, probably at an average of fully 80%, taking the Pittsburgh district as a whole. Prices have stiffened only a trifle, being held down by competition from other districts, which are willing to absorb some freight disadvantage in order to market their coal. Whatever increase there has been in demand for coal since the first of the month is purely in anticipation of a mining suspension, as domestic trade has become slack again and there is no increase in consumption by manufacturers.

There is occasional slight shading of regular prices, while one or two large interests are willing to sell free coal only at a premium of 10c., but in general the market is quotable at the regular list: Slack, 90c.; nut and slack, $1.05; nut, $1.25; mine-run, $1.30; ¾-in., $1.40; 1¼-in. steam, $1.50; 1¼-in. domestic, $1.55, per ton at mine, Pittsburgh district.

**Connellsville Coke**—One contract for furnace coke at $2.10 has just been put through, covering 10,000 tons a month for the second quarter, but the circumstances are such that the market is not squarely advanced to that level, since the sale was to a merchant firm who will apply the coke on contracts with customers requiring a strictly first grade. Prompt coke is in very poor demand and the market easy in consequence. The market continues quotable as follows: Prompt furnace, $1.90@2; contract furnace, $2@2.10; prompt foundry, $2.40@2.60; contract foundry, $2.40@2.60, per ton at ovens.

The "Courier" reports production in the Connellsville and lower Connnellsville region in the week ending Mar. 14 at 353,405 tons, an increase of 7715 tons, and shipments at 377,045 tons, a decrease of 6797 tons.

### BUFFALO

**Generally heavy bituminous stocks and market dull, with no further stir anticipated. Anthracite season closed and consumers all want April delivery. Coke unchanged.**

**Bituminous**—There is a general disposition to consider the coal season closed, so far as bituminous sizes are concerned. Consumers have stocked up considerably of late and seem to feel safe, no matter what happens. In many cases they are quite unable to carry any more, as storage capacity is all taken up. This does not indicate that the trade has been satisfactory, for the margin of profit has been small at best and considerable coal has been sold after accumulating more or less car service. This is always the case when the prices drop off, for the miners never seem to learn that consignment business is disastrous. There is not much unsold coal in transit now.

That the coal men are uncertain as to the future of the trade is shown by the few bids on public-supply contracts. There is sometimes only a single bid and on the city waterworks tender there were only three, though this is the one usually most contested. The lowest bid this year was by the Valley Camp Coal Co. of Cleveland, $2.07 for 35,000 tons of slack on a 13,500 B.t.u. test. The company is not represented here.

There is less confidence than formerly in the proposed suspension of mining because of the fact that the operators will not hold together.

The quotations of bituminous continue fairly steady on the basis of $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.25 for slack, with Allegheny Valley about 25c. less. There is a market for all the slack offering.

**Coke**—There is no stir in coke. Prices are steady, but only on the supposition that they have reached the bottom. The plan is to cut down production to meet the situation and wait for developments. Prices are still based on $4.50 for Connellsville foundry.

**Anthracite**—Practically all orders for anthracite are now

for April delivery. The local trade has run down very fast of late. There has been four lake cargoes added to the fourteen loaded sometime ago, which will end that branch of the business till the lake season opens. Some of the anthracite companies have so much of the large sizes left over that they do not know just how to turn and do not like to load anything but the smaller sizes into vessels now. Recent furnace construction is said to favor the smaller sizes even more than formerly.

### TOLEDO

**Market in a waiting attitude. The steam output small, considering conditions. No demand for domestics.**

With seasonably fair weather now, local dealers are awaiting the outcome of the operators and miners conference. In previous years large consumers were always accustomed to anticipate a possible strike but purchasing agents have as a rule, failed to consider present conditions as serious and have engaged little storage stocks. The reserve supplies in and about Toledo, are unusually small.

The domestic grades are quiet. There are a few small orders, track coal being in more ready demand. The local market is waiting future developments. Transportation matters are in excellent shape and the opening of the new Pennsylvania bridge will facilitate traffic.

Prices are holding to the following:

| | Pocahontas | Hocking | Jackson | Pomeroy | Massillon | Pittsburgh | Cambridge |
|---|---|---|---|---|---|---|---|
| Domestic lump.. | $2.25 | $1.25 | $2.50 | $1.75 | $2.50 | $1.40 | $1.40 |
| Egg..... | 2.25 | 1.25 | 2.50 | 1.50 | 2.50 | .... | .... |
| Nut..... | 1.75 | 0.80 | 2.00 | 1.75 | 2.50 | 1.35 | 1.20 |
| ¾ lump..... | .... | 0.90 | .... | .... | .... | 1.20 | 1.20 |
| Mine-run..... | 1.40 | 1.15 | .... | .... | .... | 1.10 | .... |
| Slack..... | .... | 0.70 | .... | .... | .... | .... | .... |

### COLUMBUS

**On the eve of a suspension the trade is quiet and dull. The price list off and there is little demand for stocking. Domestic business about over for the season. Most of the trade playing a waiting game.**

The coal trade in Ohio is quiet and there is little to indicate the coming suspension which is believed to be inevtable. Stockng on the part of steam users is not active and the domestic demand is about over. On the whole operators as well as jobbers are playing a waiting game and are not inclined to figure ahead.

The warm weather has caused a lull in domestic demand, which was the life of the trade during the latter part of February. Dealers have been trying to clean up their stocks and consequently they have been careful in their orders as they are loath to enter into the summer season with large stocks. What few domestic orders received are for small quantities and for immediate shipment.

Steam users are either depending on West Virginia coal, or have prepared for a short suspension. Many of them have stocks to last for 30 to 45 days, which is expected to be the length of the suspension. Jobbers say that consumers refused to be influenced by talk of a suspension as on former occasions. Railroads have stocked up heavily and most of the larger lines have supplies to last for about two months.

As a result of the lull, operations have not been active during the past week. The Pomeroy Bend district reports almost full time and about 90% of the average. In the Hocking Valley the output has been about 65% and the same in the smaller fields. In eastern Ohio some of the companies report about 75 to 85%, while others say that 50% is the average. During the remainder of the month operations are not expected to be active.

| | Hocking | Pittsburgh | Pomeroy | Kanawha |
|---|---|---|---|---|
| Domestic lump..... | $1.45 @ 1.35 | ..... | $1.50 @ 1.40 | $1.40 @ 1.35 |
| ¾ inch..... | 1.30 @ 1.25 | $1.20 @ 1.15 | 1.35 @ 1.30 | 1.30 @ 1.25 |
| Nut..... | 1.25 @ 1.20 | ..... | 1.30 @ 1.25 | 1.25 @ 1.20 |
| Mine-run..... | 1.15 @ 1.10 | 1.10 @ 1.05 | 1.15 @ 1.10 | 1.15 @ 1.10 |
| Nut, pea and slack.. | 0.80 @ 0.75 | ..... | 0.90 @ 0.85 | 0.75 @ 0.70 |
| Coarse slack..... | 0.70 @ 0.65 | 0.95 @ 0.90 | 0.80 @ 0.75 | 0.65 @ 0.60 |

### CLEVELAND

**Two days of raw cold weather created a good retail business. But succeeding warm weather and the surplus coal on track has kept prices low and the market dull. Lake shipments started last week.**

The marked dullness of the local market was in no wise improved last week. Operators and jobbers all had more coal on track than they could move. Concessions as large as 10c. below cost were reported on coal in car service and with this competition to meet some remarkably low prices were quoted.

The heaviness centered particularly around fine coal. No. 8, Middle district, Youghiogheny and Fairmount grades were freely offered on a competitive basis. Almost hourly telephone communication was held with those attending the joint conference at Chicago, developments being hoped for that would furnish a foundation for higher prices; in other words a sine die adjournment or assurance of no agreement. When it became evident that the conferences would be carried into the present week, no attempt was made to hold the market. Where possible orders were canceled or postponed and attempts made to trade coal en route for that to be shipped this week, but the wholesale trade was too well supplied to relieve the market in this way.

The railroads began accepting lake coal the middle of the week and this may relieve the pressure somewhat. Lake shippers canvassed the vessel market for boats to load before May 1, but found little boat capacity available. Most of them were loaded last fall and those made ready during the winter were promised some time ago. Considerable lake coal will be loaded if the market remains at the present low level. The railroads are loading their own equipment with this coal and charge no car service until May 1. Those who are not lake shippers are barred from taking advantage of this service as the railroads will reconsign to local trade only upon the payment of all-rail rates and car service on regular local shipment basis.

The attempt to break the freight rate from Lake Erie to Lake Superior to 25c. apparently has been abandoned and 27½c. is being offered. Shippers generally are holding back contracting until the Chicago conference is over. Some lake coal has been negotiated subject to any change in the wage contract but the business is not brisk because of large stocks at the upper lake docks.

Prices at which spot coal and coal en route were sold last week were as follows:

| | Pocahontas | No. 8 | Middle District | Fairmount | Youghiogheny |
|---|---|---|---|---|---|
| Lump, ¾ in. | $3.10 | $1.85@1.90 | $1.85@1.90 | $1.90 | $2.35 |
| Egg..... | 3.10 | | | | |
| Mine-run.. | 2.75 | 1.85@1.90 | 1.85 | | 2.25 |
| Nut..... | | 1.95 | 1.95 | | 2.20 |
| Slack..... | | 1.80 | 1.75 | 1.85 | 1.90 |

### DETROIT

**Active opening business anticipated. Many orders already on hand. A 30-day suspension would do much to help the market.**

**Bituminous**—While the steam grades are showing a tendency to drag, indications point to an active opening on the domestic fuels. Irrespective of whether a suspension occurs on Apr. 1, the numerous orders already coming in for April delivery are sufficient to assure an active business. It is hoped, however, that there will be a suspension in mining of about 30 days' duration, as this would help to clean up stocks and put the business on a firmer basis. As yet, there has been no change in the price level, and slack coal continues to be the leader in spite of heavy shipments.

**Coke**—The local coal market is decidedly stiffer, with orders accumulating far beyond expectations. Semet Solvay is quoted at $3.25 on contract, with Connellsville foundry, 72-hr., $2.75 and gas house at $2.75 f.o.b. ovens.

### HAMPTON ROADS

**Dumpings for the week fair. Demand still light on all grades. Largest single cargo of the week goes to Brazil.**

The movement of coal from Hampton Roads piers during the week has been only fair. During the early part indications were that dumpings would be extra heavy, but toward the end vessel tonnage fell off and shipments have not come up to expectations. A few large shipments have been made coastwise and to the foreign trade. The largest percentage of this as usual, went to the New England market although there was some movement to one or two of the Southern ports. Of the export business the largest single shipment went to Venice, this amounting to approximately ten thousand tons. Demand all week has been light for spot coal and so far as can be ascertained practically all that moving has been on contracts.

Export shipments for the week have gone to Rio de Janeiro, Laplata, Bermuda, Vera Cruz, Curacoa, Naples, Canal Zone, St. Thomas and Havana. There has been some movement of high volatile coal in addition to the New River and Pocahontas run-of-mine. Prices on all grades remain practically the same as they have been for several weeks.

### LOUISVILLE, KY.

**Moderately severe weather has continued, enabling the retailers to clean up stocks. Little new demand as buying is hand-to-mouth in all quarters. Prices steady at the low levels prevailing recently.**

Following several days of mild weather, there was another snow-storm on Thursday resulting in renewed orders for the retailers, few of whom had any difficulty in filling them. Few of them were forced into the market, the reluctance to buy

any more coal than absolutely necessary to fill immediate needs not being confined to domestic consumers, by any means.

The absence of any stocking demand is one of the remarkable features of the present situation, especially in view of the continued talk of a strike next month. If there is labor trouble in any of the fields, it is certain that the Eastern Kentucky mines, not being involved, will have all they can do in supplying the demand from other quarters. In this case it is apparent that regular customers may find it difficult to secure coal, which should result in a heavy demand for summer stocks by the retailers.

In view of the slack demand, prices remain at the same low level as for some weeks past, $1.50 for first-class block being about the limit. Generally speaking, there is ample nut and slack to satisfy the steam market, in spite of the short production of the domestic grades, and prices are only moderate on this and other steam grades, 85c. being about the top, with a light demand.

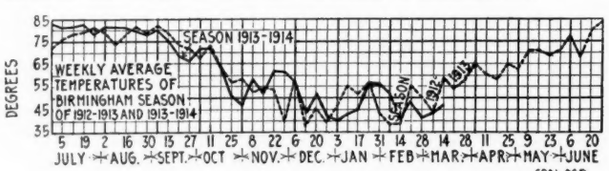
## SOUTHERN AND MIDDLE-WESTERN

### BIRMINGHAM

**Domestic lump moving, but steam coal quiet. Practically no market for either furnace or foundry coke. Only a small tonnage of pig iron sold, but at prices in advance of $11 2 F., f.o.b. Birmingham. Car situation satisfactory.**

The severe cold weather of the past ten days has brought out orders for rush shipments of lump coal, and the majority of the operators claim to have had the best business in that line for several months. However, as the steam-coal market is quiet, some orders for lump were refused, there being no way to dispose of the screenings. The demand for steam coal is small, at the present time, many of the mines running only two and three days a week, but it is thought that conditions will shortly improve. Blacksmith coal is normal, both as to tonnage and price.

Furnace and foundry coke are dull, but, as the railroads have reduced the rate $1 per ton to Western points after having raised them $2 per ton on Jan. 1, the Birmingham manufacturers are again preparing to go after this business. The reduction makes it possible to again put Alabama coke in the Western territory. Furnaces report only a small tonnage of pig iron sold, but the prices have advanced and are well over the $11 mark for 2 Foundry f.o.b. Birmingham for the first half of 1914. The car situation is satisfactory.


DEGREES
85
75
65
55
45
35
SEASON 1913-1914
WEEKLY AVERAGE TEMPERATURES OF BIRMINGHAM SEASON OF 1912-1913 AND 1913-1914
SEASON 1912-1913
5 19 2 16 30 13 27 11 25 8 22 6 20 3 17 31 14 28 14 28 11 25 9 23 6 20
JULY AUG. SEPT. OCT NOV. DEC. JAN FEB MAR. APR. MAY JUNE
COAL AGE

### NEW ORLEANS

**Cut in price of fuel oil from Mexico affects the coal market. Prices unchanged but tendency is to soften. Stocking for discount season to begin next month. Rise in Alabama rivers increases movement.**

Mexican crude sold at 35c. a barrel less than has been paid during the last year. As yet there has been no further concession made by coal dealers since the reduction of six weeks ago but in the face of the marked decrease in oil it is feared that the advantage which has been gained during the past year, will be lost. With several weeks of uninterrupted cold weather, followed by a brief mild spell and another cold wave, stocks have been reduced in the local yards to nearly a normal level, and there will be little tonnage carried over. Stocking on a smaller scale will begin next month.

In order to take advantage of high water in the Warrior River, the New Orleans & Alabama Transportation Co. has taken its power barges out of the merchandise trade and will concentrate its efforts in bringing down as great an amount of coal as possible during the season of high water, which is likely to continue until June. As yet the company has not secured sufficient coal to become a factor in the market although it continues to make contracts at fifty cents a ton lower than the companies handling up-river coal or those dealing in Alabama all-rail product.

### INDIANAPOLIS

**Mines busy supplying a heavy storage demand from large consumers. Railroads giving better car service. Prices hold stiff on all grades. Retail quotations unchanged.**

There is not much change in local conditions. The weather kept seasonably cool until the season officially ended Mar. 20 and the car service has improved temporarily, at least so that most mines in the state have been running full time. The storing of coal against the possibility of a shut-down resulting in a steady run of orders. Little has transpired to indicate that there will be suspension, but large coal users have learned to be forehanded.

The domestic trade averages up well, although purchases are mostly for stocking-up and will be largely limited to that until the end of the season. Screenings and other steam grades continue in good demand at prices well up the maximum of the winter. The railroads have been among the large purchasers and there is less likelihood of their confiscating coal, as in former years, in case work is suspended at the mines. Retailers in this city are still selling at the prices set Sept. 20. It is doubtful if there has been a former year when prices were so uniform throughout fall and winter.

### ST. LOUIS

**Lack of interest among buyers the feature of the present situation. Little surplus buying except among larger consumers. Basis of new contracts not providing for increase in cost of production.**

The passive attitude of the coal-buying public previous to a strike period is one of the greatest surprises that the trade has had in many years. During the past week there has been several purchases of storage coal made, but not to the extent that was anticipated, and not anywhere near the volume in past years under the same conditions. Several railroads have been buying for the past two or three weeks, but only in small quantities, though increasing during the past ten days. At most steam plants there is little storage coal in sight, with the exception of those in the lead belt, and two or three large manufacturing plants on the east side. The coal buyers seem to think that even should there be a shutdown, it will only be for a short time, and when the mines resume again, the operators will be just as eager for business as now, and prices will be on a correspondingly low level as usual.

Until the beginning of the present week, it has been a summer market, as far as prices have been concerned, but this is only on the larger sizes, screenings being lower than at any time last summer. With the beginning of the present week there has been a change, but even at the best, prices will not be anything like they were at the last suspension. No increased cost of production is anticipated for the coming year, as far as the Illinois fields are concerned, and some operators and shippers are already in the market with contracts, for both one and two years.

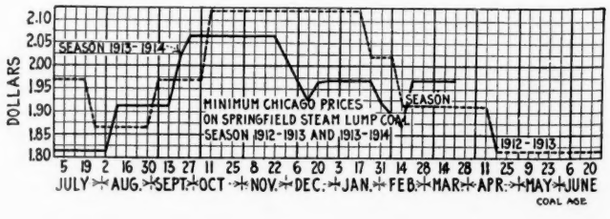
During the past week something like 250 to 300 cars of anthracite have been sold for April shipment, and about the same amount for May and June. Some smokeless has been bought for April delivery, and some also for May and June, but not the tonnage that was expected.

There is absolutely nothing doing in coke, gas house and byproduct being a drug on the market, and the future is somewhat uncertain for fuel of this character.

The circular market at the close of the past week was as follows:

| | Carterville and Franklin Co. | Big Muddy | Mt. Olive | Standard | Sparta |
|---|---|---|---|---|---|
| 2-in. lump | ..... | ..... | ..... | $0.90 @ 1.00 | $1.15 |
| 3-in. lump | ..... | ..... | $1.50 | ..... | ..... |
| 6-in. lump | $1.35 @ 1.50 | ..... | 1.30 | 1.15 @ 1.25 | 1.35 |
| Lump and egg | 1.85 @ 2.15 | 2.25 | ..... | ..... | 1.15 |
| No. 1 nut | 1.30 @ 1.45 | ..... | ..... | ..... | ..... |
| Screenings | 0.75 @ 0.85 | ..... | ..... | 0.65 @ 0.70 | 0.75 @ 0.80 |
| Mine-run | 1.10 @ 1.20 | ..... | ..... | 0.80 @ 0.85 | ..... |
| No. 1 washed nut | 1.50 @ 1.60 | 2.25 | 1.50 | ..... | ..... |
| No. 2 washed nut | 1.25 @ 1.35 | ..... | 1.25 | ..... | ..... |
| No. 3 washed nut | 1.25 @ 1.30 | ..... | ..... | ..... | ..... |
| No. 4 washed nut | 1.25 @ 1.30 | ..... | ..... | ..... | ..... |
| No. 5 washed nut | 0.80 @ 0.85 | ..... | ..... | ..... | ..... |

The April anthracite circular, f.o.b. St. Louis, will be: Chestnut, $7.05; egg and stove, $6.80; grate, $6.55. The smokeless circular for April will be: Lump and egg, $4.35; mine-run, $4. On Arkansas anthracite, the April circular will be: Lump, $5.25; egg and chestnut, $5.50; pea, $4.50.


DOLLARS
2.10
2.05
2.00
1.95
1.90
1.85
1.80
SEASON 1913-1914
MINIMUM CHICAGO PRICES ON SPRINGFIELD STEAM LUMP COAL SEASON 1912-1913 AND 1913-1914
SEASON 1912-1913
5 19 2 16 30 13 27 11 25 8 22 6 20 3 17 31 14 28 14 28 11 25 9 23 6 20
JULY AUG. SEPT. OCT NOV. DEC. JAN. FEB MAR. APR. MAY JUNE
COAL AGE

### KANSAS CITY

**Operations much curtailed but prices steady at a low level. Little new business anticipated.**

Despite more favorable weather conditions, operations in Kansas and Missouri are still limited to about 50% of total capacity. Quotations have remained steady at the rock bottom prices which have prevailed for several months past. The last of March made a desperate effort to retrieve the results of the early part of the month, with only fair success. Consumers anticipating warmer weather have refused to order and the same is true of retailers, who are clinging to the old hand-to-mouth basis.

## FOREIGN MARKETS

### GREAT BRITAIN

**Mar. 13**—As a result of stormy weather, tonnage is being delayed and stocks of coal are excessive. In the circumstances it is an easy matter to secure concessions for prompt supplies, but colliery owners regarding this adverse state of affairs as only temporary, are holding with firmness for late March positions. Quotations are approximately as follows:

| | | | |
|---|---|---|---|
| Best Welsh steam | $4.50 | Best Monmouthshires | $4.11 |
| Best seconds | 4.38 | Seconds | 3.93 |
| Seconds | 4.14 | Best Cardiff smalls | 2.64 |
| Best dry coals | 4.26 | Seconds | 2.52 |

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are net f.o.b. Newport; both exclusive of wharfage, and for cash in 30 days.

## PRODUCTION AND TRANSPORTATION STATISTICS

### CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for January and the seven months ending Jan. 31, 1912 and 13, in short tons:

| | January | | | | Seven Months | | | |
|---|---|---|---|---|---|---|---|---|
| *Destination* | 1914 | % | 1913 | % | 1914 | % | 1913 | % |
| Tidewater | 408,994 | 25 | 377,520 | 30 | 2,023,497 | 19 | 2,068,111 | 22 |
| East | 300,426 | 18 | 303,493 | 24 | 1,555,035 | 14 | 1,518,698 | 16 |
| West | 887,284 | 54 | 489,985 | 39 | 6,568,361 | 61 | 5,437,455 | 58 |
| Total | 1,596,704 | | 1,170,998 | | 10,146,893 | | 9,024,264 | |
| *From Connections* | | | | | | | | |
| Bituminous | 47,448 | | 92,894 | | 671,724 | | 334,56 | |
| Anthracite | 1,645,195 | | 1,264,270 | | 19,828,030 | | 9,366,178 | |
| Coke | 34,256 | | 30,764 | | 215,253 | | 165,700 | |

### NORFOLK & WESTERN

The following is a statement of the tonnage shipped over this road during February and the first two months of this year, as compared with corresponding periods of 1913, in short tons:

| | February | | Two Months | |
|---|---|---|---|---|
| *Coal* | 1913 | 1914 | 1913 | 1914 |
| Tidewater, foreign | 122,944 | 119,110 | 267,006 | 270,425 |
| Tidewater, coastwise | 337,202 | 311,679 | 646,120 | 649,333 |
| Domestic | 1,413,398 | 1,235,686 | 3,030,292 | 2,712,531 |
| *Coke* | | | | |
| Tidewater, foreign | 4,909 | 15 | 9,964 | 15 |
| Domestic | 147,938 | 95,854 | 291,134 | 214,599 |
| Total | 2,026,391 | 1,762,344 | 4,244,516 | 3,846,903 |

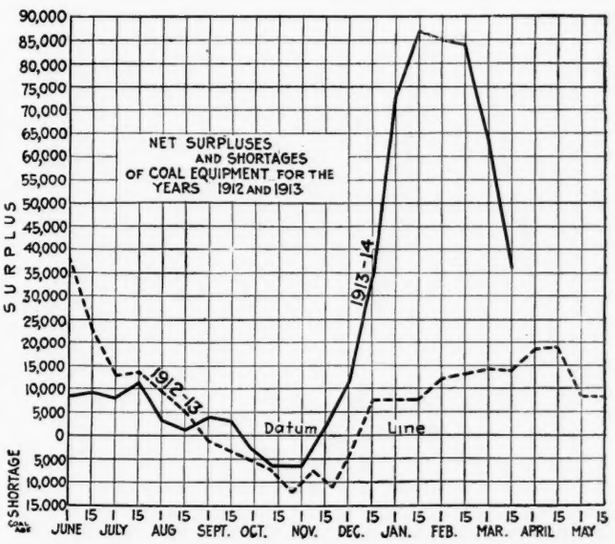
### THE CAR SITUATION

American Ry. Association reports surpluses and shortages of coal equipment for two weeks ended Mar. 15, as follows:

| | Surplus | Shortage | Net* |
|---|---|---|---|
| New England Lines | 892 | 0 | **892** |
| N. Y.; New Jersey, Del.; Maryland; Eastern Penn. | 1,109 | 1,865 | **756** |
| Ohio; Indiana; Michigan; Western Pennsylvania | 15,087 | 440 | **14,647** |
| West Virginia, Virginia, North & South Carolina | 4,029 | 900 | **3,129** |
| Kentucky, Tenn.; Miss.; Alabama, Georgia, Florida | 5,837 | 0 | **5,837** |
| Iowa, Illinois, Wis., Minn.; North & South Dakota | 3,021 | 77 | **2,944** |
| Montana, Wyoming, Nebraska | 1,527 | 0 | **1,527** |
| Kansas, Colorado, Missouri, Arkansas, Oklahoma | 3,099 | 0 | **3,099** |
| Texas, Louisiana, New Mexico | 425 | 0 | **425** |
| Oregon, Idaho, California, Arizona | 4,107 | 0 | **4,107** |
| Canadian Lines | 0 | 0 | 0 |
| Total | 39,133 | 3,282 | **34,851** |

| | Nov. 15 | Dec 1 | Dec 15 | Jan 1 | Jan. 15 | Feb. 1 | Feb. 15 | Mar. 1 |
|---|---|---|---|---|---|---|---|---|
| Surplus | 10,520 | 17,621 | 36,435 | 72,535 | 87,149 | 85,489 | 84.775 | 64,822 |
| Shortage | 8,477 | 5,095 | 2,295 | 57 | 789 | 102 | 239 | 1,394 |
| Net* | **2.043** | **12.526** | **34.140** | **72,478** | **86,360** | **85,387** | **84,536** | **63,428** |

***Bold face** type indicates a surplus.


NET SURPLUSES AND SHORTAGES OF COAL EQUIPMENT FOR THE YEARS 1912 AND 1913
SURPLUS
SHORTAGE
1913-14
1912-13
Datum Line
JUNE JULY AUG SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY

## COAL SECURITIES

The following table gives the range of various active coal securities and dividends announced during the week ending Mar. 23:

| | Week's Range | | | Year's Range | |
|---|---|---|---|---|---|
| **Stocks** | High | Low | Last | High | Low |
| American Coal Products | 85 | 84½ | 85 | 85 | 84½ |
| American Coal Products Pref | 104½ | 104½ | 104½ | 106 | 104½ |
| Colorado Fuel & Iron | 33¼ | 32 | 33¼ | 34½ | 28½ |
| Colorado Fuel & Iron Pref | .... | .... | 155 | .... | .... |
| Consolidation Coal of Maryland | .... | .... | 102½ | .... | .... |
| Island Creek Coal Com | 47 | 47 | 47 | .... | .... |
| Island Creek Coal Pref | 88½ | 87½ | 88½ | .... | .... |
| Lehigh Valley Coal Sales | 170 | 150 | 165 | .... | .... |
| Pittsburgh Coal | 21½ | 21 | 21½ | 23½ | 17¼ |
| Pittsburgh Coal Pref | 92½ | 92 | 92½ | 93½ | 86 |
| Pond Creek | 18¼ | 17½ | 18½ | .... | .... |
| Reading | 166¼ | 163½ | 165½ | 172½ | 161½ |
| Reading 1st Pref | 89 | 88¾ | 89 | 89 | 87½ |
| Reading 2nd Pref | .... | .... | 90 | 93 | 90 |
| Virginia Iron, Coal & Coke | 50½ | 50½ | 50½ | 52 | 40 |

| | Closing Bid | Asked | Week's Range or Last Sale | | Year's Range | |
|---|---|---|---|---|---|---|
| **Bonds** | | | | | | |
| Colo. F. & I. gen. s.f.g. 5s | 97 | 98½ | 99 | 99 | 91½ | 99 |
| Colo. F. & I. gen. 6s | 106½ | 110 | 107½ | June '12 | .. | .. |
| Col. Ind. 1st & coll. 5s. gu | 79½ | 80 | 79 | Mar. '14 | 76½ | 82 |
| Cons. Ind. Coal Me. 1st 5s | .. | 76 | 76 | Feb. '14 | 76 | 79 |
| Cons. Coal 1st and ref. 5s | 89 | 92 | 89 | 89 | 89 | 89 |
| Gr. Riv. Coal & C. 1st g 6s | 91 | .. | 99½ | Feb. '14 | 99½ | 99½ |
| K. & H. C. & C. 1st s f g 5s | .. | .. | 102½ | Apr. '06 | .. | .. |
| Pocah. Con. Coll. 1st s f 5s | 91 | .. | 93½ | 93½ | 93½ | 93½ |
| St. L. Rky. Mt. & Pac. 1st 5s | 87 | 88 | 87½ | 87½ | 84 | 87½ |
| Tenn. Coal gen. 5s | 80½ | 82½ | 80½ | 80½ | 77 | 82 |
| Birm. Div. 1st consol. 6s | 100 | 103½ | 103½ | 103½ | 97½ | 103½ |
| Tenn. Div. 1st g 6s | 101½ | Sale | 101½ | 101½ | 101½ | 103 |
| Cah. C. M. Co. 1st g 6s | 101½ | 103 | 102½ | Mar. '14 | 101 | 102½ |
| Utah Fuel 1st g 5s | 101 | .. | 103 | July '13 | .. | .. |
| Victor Fuel 1st s f 5s | .. | 78 | 80 | May '13 | .. | .. |
| Va. I. Coal & Coke 1st g 5s | 92½ | 83½ | 93 | 93 | 92½ | 95 |

### DIVIDENDS

**Central Railroad of New Jersey**—Regular quarterly dividend of 2% payable May 1 to holders of record Apr. 17.

**Lehigh Valley**—Regular dividend on both the common and prefered of $1.25 payable Apr. 11 to holders of record Mar. 28.

**The Reading Co.**—Regular quarterly dividend on the common of 2% payable May 14 to holders of record Apr. 27.

**St. Louis, Rocky Mountain & Pacific Co.**—Regular quarterly No. 7 on the preferred of 1¼% payable Mar. 31 to holders of record Mar. 22 to Mar. 30.

**Central Coal & Coke Co.**—Regular quarterly dividend on the common of 1½% and 1¼% on the preferred both payable Apr. 15 to holders of record Apr. 1 to Apr. 15.

**Island Creek Coal**—Regular quarterly dividend on the common stock of 50c. payable May 1 to holders of record Apr. 23 and $1.50 on the preferred payable Apr. 1 to holders of record Mar. 23.

**Westmoreland Coal**—Dividend of 3½% payable Apr. 1 to holders of record Mar. 18 to Apr. 1.

**American Coal Products Co.**—Regular quarterly dividends of 1¾% on both the common and preferred, the former payable Apr. 1 to holders of record Mar. 25, and the preferred payable Apr. 15 to holders of record Apr. 10.

# Financial Department

## Colorado Fuel & Iron Co.

President J. F. Welbom, in the 21st annual report for the fiscal year ended June 30, 1913, says in part as follows:

**Results**—Gross earnings were $24,315,888, an increase of $47,435, and operating expenses amounted to $20,695,621, an increase of $199,451. Income from other sources increased $78,936, making the net income, before deducting charges, $4,375,895, a decrease of $73,079. After providing for all fixed charges, including sinking funds, etc., there remained a surplus of $1,727,192. A preferred dividend of 4%, or $80,000, was paid July 1, leaving a balance of $1,647,192 to be carried to profit and loss.

A dividende of 35% on the preferred stock, amounting to $700,000, was paid out of profit and loss Mar. 20, 1913.

**Bonds, Merger**—In accordance with the action of the shareholders, taken on June 17, our $14,067,000 debenture bonds then held by the trustee under the Colorado Industrial mortgage, have been cremated and the properties of the Colorado Industrial Co. were transferred to the Colorado Fuel & Iron Co., thereby reassembling the properties under one head. The balance sheet in this report, therefore, includes all of the properties heretofore standing in the name of both companies, and shows their total outstanding bonded debt.

STATEMENT OF PRODUCTION FOR YEARS ENDING JUNE 30

| Tons, 2000 lb.— | 1912-13 | 1911-12 | 1910-11 | 1909-10 |
|---|---|---|---|---|
| Coal | 4,091,667 | 4,038,852 | 4,233,756 | 4,722,832 |
| Coke | 784,627 | 777,993 | 753,192 | 905,599 |
| Iron ore | 853,878 | 813,728 | 841,699 | 879,630 |
| Limestone | 485,756 | 459,913 | 425,704 | 407,517 |
| Pig iron produced | 416,467 | 426,659 | 397,701 | 385,602 |
| Finished iron and steel | 458,521 | 485,743 | 424,421 | 412,749 |

RESULTS FOR YEARS ENDING JUNE 30.

| | 1912-13 | 1911-12 | 1910-11 | 1909-10 |
|---|---|---|---|---|
| Iron department | $14,982,804 | $15,140,523 | $13,775,664 | $13,604,832 |
| Industrial dept. (fuel) | 9,333,083 | 9,127,929 | 9,159,021 | 10,034,981 |
| Total gross earnings | $24,315,888 | $24,268,452 | $22,934,685 | $23,639,813 |
| Iron department | 2,857,119 | 2,766,775 | 2,502,566 | 2,492,136 |
| Industrial dept. (fuel) | 763,147 | 1,005,507 | 975,783 | 1,250,479 |
| Total net earnings | $3,620,266 | $3,772,282 | $3,478,349 | $3,742,615 |
| Add—Income from secur. | 563,439 | 526,270 | 535,672 | 499,080 |
| Interest and exchange | 192,190 | 150,423 | 135,927 | 127,840 |
| Total net income | $4,375,895 | $4,448,975 | $4,149,948 | $4,369,535 |
| **Deduct—** | | | | |
| Bond interest | $2,026,780 | $2,039,622 | $2,091,610 | $2,097,692 |
| Taxes | 243,722 | 226,737 | 214,785 | 218,765 |
| Real estate | 142,531 | 138,317 | 151,263 | 171,458 |
| Insurance, sociological, personal injury, etc. | 50,082 | 64,105 | 233,602 | 154,908 |
| Equipment renewal | 120,000 | 120,000 | 128,106 | 164,945 |
| Loss on Col. & Wyo. Ry. | ..... | ..... | b10,005 | ..... |
| Loss on Crystal R. RR. | 36,000 | 36,000 | 36,000 | 36,000 |
| Prospecting | 29,588 | 22,965 | 24,904 | 18,948 |
| Pref. dividends | *(4)80,000 | (5)100,000 | ..... | ..... |
| Total deductions | $2,728,703 | $2,747,746 | $2,890,276 | $2,862,716 |
| Balance, surplus | $1,647,192 | $1,701,229 | $1,259,672 | $1,506,819 |

b Includes traffic contract guaranty at $25,000 per month ($300,000), less earned from traffic, as per contract for year, $289,995 in 1910-11 and $105,309 in 1908-09.

* The dividend above deducted in 1912-13 is the 4% ($80,000) paid July 1, 1913; there was also declared at the same time a dividend of 4%, which was paid Jan. 1, 1914. An extra payment of 35% ($700,000) was also made Mar. 20, 1913 on account of the 74% accumulated dividends, leaving about 39% still due.

BALANCE SHEET JUNE 30

| Assets— | 1913 | 1912 | Liabilities— | 1913 | 1912 |
|---|---|---|---|---|---|
| Properties and sec. | $62,210,218 | $15,749,791 | Common stock | $34,235,500 | $34,235,500 |
| Equipment | ..... | 27,062,157 | Pref. stock | 2,000,000 | 2,000,000 |
| Cash on hand | 5,280,426 | 4,453,007 | Funded debt | x45,266,000 | 1,813,0000 |
| Stocks and bonds | 15,282,450 | 7,381,644 | Accounts and bills pay | 954,982 | 950,600 |
| Accounts and bills rec. | 3,749,457 | 3,914,562 | Hospital | 23,156 | 14,616 |
| Subsidiary cos | 140,911 | 2,415,811 | Accrued bond int. | 831,574 | 834,633 |
| Manufac. stocks, etc. | 3,075,831 | 2,682,515 | Tax payment fund | 100,000 | 100,000 |
| Stripping, etc. | 18,759 | 193,,60 | Pref.dividends | 80,000 | 100,000 |
| Acer. divs. and int. | 84,062 | 88,989 | Sink fd.—real est. | 1,483,071 | 985,116 |
| Miscellaneous | 152,128 | 145,275 | Miscell. funds. | 287,719 | 239,734 |
| | | | Profit and loss | y4,732,240 | 3,904,161 |
| Total | $89,994,242 | $64,177,360 | Total | $89,994,242 | $64,177,360 |

x Includes Col. Fuel & Iron Co. 5% gen. mortgage bonds, $5,638,000; Col. Fuel Co. 6% gen. mortgage bonds, $240,000; Grand River Coal & Coke Co. 6% 1st mortgage bonds, $863,000, and Col. Industrial Co. 5% 1st mortgage bonds, $38,525,000.

y After deducting the $700,000 extra dividend (35%) paid Mar. 20, 1913 on account of accumulated divs. on pref. and also $101,085 for depreciation and account of dismantled partly constructed merchant mill, but before and after deductions amounting to (net) $18,027, but before deducting the 4% dividend ($80,000) paid Jan. 1, 1914.

CONSOLIDATED BALANCE SHEET JUNE 30

The Colorado Fuel & Iron Co. and Subsidiary Companies

| Assets— | 1913 | 1912 | Liabilities— | 1913 | 1912 |
|---|---|---|---|---|---|
| Iron etc.,lands | $54,862,468 | $55,555,789 | Common stock | $34,235,500 | $34,235,500 |
| Equipm't, etc. | 28,592,342 | 28,446,687 | Pref. stock | 2,000,000 | 2,000,000 |
| Railroads | 5,810,427 | 5,818,795 | Funded debt— | | |
| Cooperage plant | 30,468 | 30,791 | Colo. Fuel 6s. | 240,000 | 280,000 |
| Timber lands, etc. | 84,000 | 73,346 | Colo. Ind. Co. 5s | 33,437,000 | 33,437,000 |
| Store bldgs., etc. | 425,273 | 419,103 | Rocky Mtn., 5s | 483,000 | 499,000 |
| Telegraph sys. | 54,300 | 54,300 | Gr. Riv. C'l, 6s | 863,000 | 868,000 |
| Inventories, etc. | 3,865,644 | 3,427,445 | Pueblo Realty Tr.Co.,6s | 505,398 | 506,823 |
| Accounts and bills rec. | 3,277,022 | 3,582,771 | Accounts, etc. pay | 1,952,272 | 1,863,915 |
| Cash | 5,563,138 | 4,713,436 | Acer. bond int | 835,599 | 845,183 |
| Stocks and bonds | 473,710 | 341,481 | Accrued taxes. | 113,500 | 113,500 |
| Cash(trustees) | 8,278 | 4,668 | Pref. dividend | 80,000 | 100,000 |
| Reserve funds | 99,341 | 99,341 | Balance | 22,827,646 | 22,284,015 |
| Accrued interest | 16,487 | 21,418 | Total | 103,210,915 | 102,630,941 |
| Royalties in adv. | 48,015 | 41,570 | | | |
| Total | 103,210,915 | 102,630,941 | | | |

**Additions**—To meet the increased demand for openhearth steel, the executive committees on Apr. 21, 1913, authorized the construction of three openhearth furnaces (at a cost of about $500,000), as an addition to the plant of 12 openhearth furnaces now in operation.

**Wages**—On Apr. 1, 1912, an increase was made in the wages of coal-mine and coke-oven operatives, which added approximately $25,000 per month to the payroll, and on Mar. 1, 1913, steel-works employees were advanced an amount which represented an increase of approximately $20,000 per month in that payroll; the total of these two advances equaling at least $500,000 per annum. These increases represented a charge to the fiscal year under review of approximately $300,000 more than was borne by 1911-12.

**Note**—For the previous annual report of this company, see Coal Age, Vol. 3 p. 358.

## Pennsylvania R.R. Coal Properties

The annual report of the P. R.R. for the year ended Dec. 31, 1913, has the following regarding its coal holdings:

In accordance with the policy heretofore announced as to the proposed sale of this company's security holdings in the anthracite coal companies owning properties served by its system, namely, the Susquehanna Coal Co., Mineral Railroad & Mining Co., and the Summit Branch Mining Co., your board deemed it desirable to first compact the ownership of the securities and properties of these coal companies into the Susquehanna Coal Co. Therefore, there has been sold to the Susquehanna Coal Co. the capital stock and debt of the Summit Branch Mining Co., held by your company, and upon the transfer of its property and rights to that coal company the Summit Branch Mining Co. will be dissolved. Your company is also the owner of one-third of the capital stock of the Mineral Railroad & Mining Co., the balance being owned by the Northern Central Railway Co. That company operated lands leased from the Northern Central Railway Co. and from the Manor Real Estate & Trust Co., but being unable for many years to pay the prescribed royalties, it transferred its 999-year leases to the Suspuehanna Coal Co., effective Jan. 1, 1914, and steps have been taken looking to the dissolution of the Mineral Railroad & Mining Co. The lands of the Manor Real Estate & Trust Co., operated by the Mineral Railroad & Mining Co., have been sold to the Susquehanna Coal Co., and negotiations concluded for the sale to it of the other lands operated by the Mineral Railroad & Mining Co. for the Northern Central Railway Co. subject to fixing the final price. Under the foregoing arrangement payment for said lands will be made by the Susquehanna Coal Co. in its 5% -5-year gold bonds, which are exchangeable for its first mortgage bonds if and when the same are issued by that company.

The purpose of vesting the ownership of these properties in the Susquehanna Coal Co. is to insure the continued operation of the unprofitable as well as the profitable mines, and thereby conserve the coal supply, and so that should a purchaser be found for the securities of the Susquehanna Coal Co., held by your company and the Northern Central Railway Co., the new owners will obtain possession of the properties subject to these mining obligations.